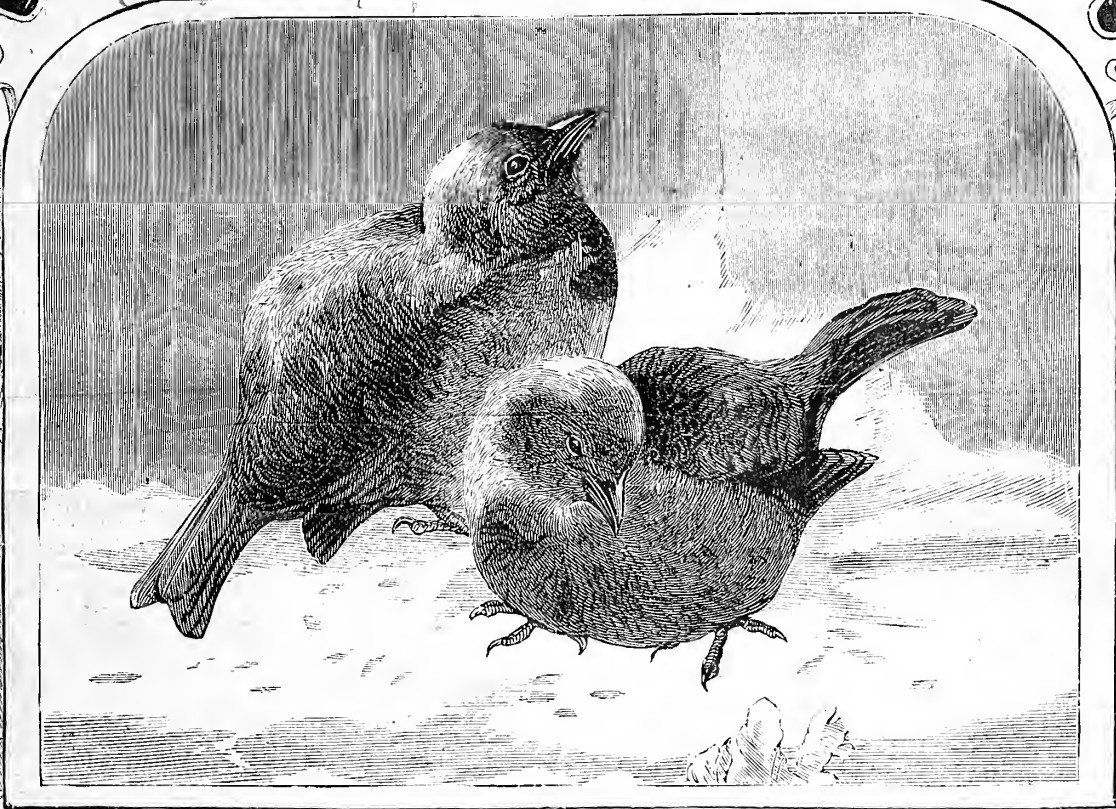


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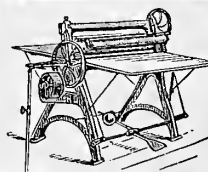
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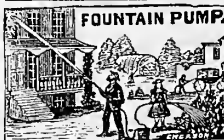
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AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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NEW SERIES—No. 372.



THE MUSMON OR WILD SHEEP OF EUROPE—(*Ovis Musimon*).—Drawn and Engraved for the American Agriculturist.

The origin of our domesticated sheep will probably ever remain a mystery. From which of the known races of wild sheep it has been derived, is a matter of dispute, or at least of difference, amongst naturalists. Indeed, it is and has been a question which of these wild races is really the aboriginal one, or whether there was but one or more than one. Whoever has carefully studied the subject, and is without prejudice, or does not seek to support a foregone conclusion, would probably consider the different wild sheep to have been derived from one aboriginal race, and the different domesticated varieties that have a very ancient history, to have sprung from the more ancient wild races. Thus we might consider with reason, that the Argali or Asiatic Mountain Sheep, was the progenitor of our Rocky Mountain Sheep, and of the domesticated Asiatic races, as well as of the European wild mountain sheep the Musmon, the subject of the

above illustration; and this last in turn may reasonably be supposed to have been the ancestor of the very different Spanish Merino, and consequently of our own American Merino. The gradual evolution of an improved breed from a very coarse ancestry, and the wonderful refinement that is possible in course of even a few years of careful breeding, go to explain very satisfactorily many otherwise startling differences in the structure, habits, and other general characteristics of an animal. It is, therefore, far from difficult to account for the widely different characters of our Merino and this ancient wild race, which is, doubtless, at this time nearly, if not precisely, like what it was two or three thousand years ago. The Musmon inhabits the mountains of Southern Europe, and of the Islands of Crete, Cyprus, Sardinia, and Corsica. It formerly abounded in Spain, and is supposed still to exist in the mountains of some of the wilder por-

tions of that country. The male has horns two feet in length, but the female is often hornless. These animals gather in flocks of some hundreds, except at the breeding season, when the large flocks separate into small ones, consisting of one male and a few females. They have been known to breed from the domestic sheep, and the progeny is fertile. Such cross breeding was common in the time of Pliny, or over 2,000 years ago, and the produce was mentioned by this writer as being termed Umbri. The coat of this sheep is outwardly a brownish hair, covering an undercoat of fine, gray wool, which is short, but full of spirals, and very closely serrated upon the edges. It is interesting to consider if the Spanish Merino inherits its "fine, short wool, full of spirals, and closely serrated," from this original race, which inhabited the country where the former first became known to the Romans, who carefully bred and greatly improved it.

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Taking Out Stumps.—"W. A." Lee-morn, Mo. It will certainly pay to take the stumps out of a field, so that a mower can be used. The gain in time and labor made would make it worth while to spend a dollar for each stump, unless they are very closely set. With giant powder, or even common powder, a stump may be blown out for less than this sum.

Galvanic Chains, Belts, and other electrical appliances. We have numerous letters concerning various contrivances for applying electricity as a remedy, and we can only give a general answer. These things are not sent to us for examination, and we have no special knowledge of the different kinds now offered. Electricity in some of its forms has been found to be a useful remedial agent. Whether it is likely to be useful in any particular case, we can not say. We do not practise medicine, and if we did, we should not give advice without seeing the patient. Electricity being an agent about which people in general know but little, is one of the things made use of by quacks. Some of the pretended electrical appliances we have seen, are thoroughly unscientific in construction, and can have no more medicinal effect when applied to the body than a belt or pad of leather, or other inert substance.

Calendar for January.

Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Michi-gan, Wiscon-sin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken-tucky, Missou-ri, and Cali-fornia.		
		Sun.	Mon.	Tues.	Sun.	Mon.	Tues.	Sun.	Mon.	Tues.
1	T	7 30	4 38	6 4	7 25	4 44	5 58	7 19	4 49	5 50
2	W	7 30	4 39	7 5	7 25	4 44	6 58	7 19	4 50	6 51
3	T	7 30	4 40	sets	7 25	4 45	sets	7 19	4 51	sets
4	F	7 30	4 41	5 38	7 25	4 46	5 41	7 19	4 51	5 50
5	S	7 30	4 42	6 43	7 25	4 47	6 38	7 19	4 52	6 53
6	T	7 30	4 43	7 46	7 25	4 48	7 50	7 19	4 53	7 53
7	M	7 30	4 44	8 43	7 25	4 49	8 50	7 19	4 51	8 53
8	T	7 29	4 45	9 49	7 24	4 50	9 50	7 19	4 55	9 50
9	W	7 29	4 46	10 50	7 24	4 51	10 49	7 19	4 56	10 49
10	T	7 29	4 47	11 51	7 24	4 52	11 50	7 19	4 57	11 50
11	F	7 29	4 48	morn	7 24	4 53	morn	7 19	4 58	morn
12	S	7 28	4 49	0 53	7 23	4 54	0 52	7 18	4 59	0 49
13	S	7 28	4 50	2 3	7 23	4 54	1 57	7 18	5 0	1 54
14	M	7 28	4 51	3 12	7 23	4 56	3 7	7 18	5 1	3 1
15	T	7 28	4 52	4 24	7 22	4 57	4 17	7 18	5 2	4 11
16	W	7 27	4 54	5 34	7 22	4 59	5 26	7 17	5 3	5 19
17	T	7 26	4 55	6 38	7 21	5 0	6 28	7 17	5 4	6 22
18	F	7 25	4 56	7 45	7 21	5 1	7 35	7 16	5 6	7 35
19	S	7 25	4 58	8 59	7 20	5 2	8 54	7 16	5 7	8 59
20	S	7 24	4 59	10 12	7 20	5 3	10 13	7 15	5 8	10 13
21	M	7 23	5 0	11 25	7 19	5 4	11 25	7 15	5 9	11 25
22	T	7 23	5 1	12 38	7 19	5 5	12 38	7 14	5 10	12 38
23	W	7 22	5 2	1 51	7 18	5 6	1 51	7 13	5 11	1 51
24	T	7 21	5 3	3 04	7 18	5 7	3 04	7 13	5 12	3 04
25	F	7 20	5 4	4 17	7 16	5 9	4 17	7 12	5 13	4 17
26	S	7 20	5 6	5 30	7 15	5 10	5 30	7 11	5 15	5 30
27	M	7 19	5 8	6 43	7 15	5 12	6 43	7 11	5 16	6 43
28	T	7 18	5 9	7 57	7 14	5 13	7 57	7 10	5 17	7 57
29	W	7 17	5 10	9 10	7 13	5 14	9 10	7 9	5 18	9 10
30	T	7 16	5 11	10 23	7 13	5 15	10 23	7 8	5 19	10 23
31	F	7 15	5 13	11 36	7 11	5 17	11 36	7 7	5 20	11 36

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'N'TON	CHICAGO.
New M'n	3 9 19 mo.	9 7 mo.	8 55 mo.	8 43 mo.	8 13 mo.
1st Quart	11 2 3 ev.	1 51 ev.	1 39 ev.	1 27 ev.	0 57 ev.
Full M'n	18 7 27 ev.	7 15 ev.	7 3 ev.	6 51 ev.	6 21 ev.
3d Quart	25 11 6 mo.	10 54 mo.	10 42 mo.	10 30 mo.	10 0 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JANUARY, 1878.

A new year now begins which promises to be one of eventful interest to the agriculturist and all others engaged in productive industry. For many years the nation has been undergoing a severe process of liquidating debts, casting off fictitious ideas of values and, to use a common expression, "coming down to hard pan." At the outset of this revulsion, which was inevitable after the previous years of an inflated and deceptive prosperity, farmers were the first to suffer, and the most seriously afflicted. Nearly every one was in debt for borrowed money or for property, machinery, implements, or stock. Prices of produce first fell, but the cost of all things needed for the farm and household, together with the price of labor, kept up, and farmers had more than their share of adversity. Along with the business troubles, came unfavorable seasons, fatal disease among stock, and the "hateful grasshopper," with other pests. But out of adversity grew an improved condition which now appears to have placed the farmer beyond the reach of trouble, and to promise him in the future a lengthened season of prosperity, should no untoward accident occur. After the disagreeable experiences of the past years we now have good reason for congratulation. We are emboldened to act once more with the usual native enterprise of the American people. Circumstances of all kinds favor this. The bottom has been reached. For the past 20 years the prices of many things which the farmer purchases have not been lower than now. Labor is lower than ever before. Hundreds of thousands of laborers are waiting for work, yet there is work for every one. What a change for the better would it be if all this labor could be turned at once to productive account! Considering the vast amount of work that is waiting to be done, the necessary improvements of roads, fields, buildings, tools, implements, and other things upon which the prosperity of agriculture depend; the vast field in fact which is opened up by the absolute need for the best and highest culture of our soil, and the most profitable exercise of the farmer's art, one is amazed as he ponders over the results that might and would be attained were all this labor employed and all these improvements set in

operation and made. What fruitful fields, where now are barren wastes or worthless weeds; what wealth, where now is poverty; what populous villages, where now are wretched hamlets; what comfort and enjoyment where now misery and destitution prevail. Here is the labor and there is the work to be done; what keeps these apart, and hinders the desirable result? Certainly every farmer in the land can do something at this time to change all this, and hasten the looked for prosperity.

Hints for Work.

Planting and Sowing may be done in many of the Southern States. Where the season admits of it, potatoes may be planted this month, and will ripen in June. It is only necessary to cover the sets deeper than in summer planting, and if a frost is probable, draw earth over the young plants with the hoe. Oats sown this month will do as well in most cases as those sown in the fall.

The Hessian Fly is active in the South at this season, while dormant in the colder North. Anything that will disturb the larva in its operations will be beneficial; as will also any fertilizing application that will strengthen the plants. Rolling the wheat, sowing 5 bushels of salt, or 50 bushels of unleached wood ashes, or 10 bushels of soot per acre, have all been found of use in destroying the insects and in stimulating the growth of the wheat.

Breaking Up the Land, for the main crops of cotton and corn, should be begun this month. Secure laborers for the year. The planter can now select the best help, while later he must take just what he can get. The best laborers don't wait long to be hired, and those who look out first are best served.

Fences are to be Repaired or made, and much draining may be done, both in the North and South.

Hired Labor is Cheap; for a few dollars, and by exercising judgment, one can now get more work done than he could for many years past. The laborer who stands idle when he may earn 50 cents, is unwise; a little is better than nothing.

What May be Done?—Stone may be got out and hauled into heaps where it may be wanted for sale or for use. A well may be dug in the barn yard. Posts and rails may be got out in the rough, hauled to a convenient spot, and piled up to dry. Slabs from a saw-mill make excellent fence posts, and can usually be purchased very cheaply, and these may be drawn home. Springs may be cleaned out and walled up. Rocks may be undermined and toppled into large holes and buried. To a willing worker, there never comes a time when there is nothing to be done; and much may be done now to prepare for the busier period which will soon be at hand.

Wintering Horses.—Working horses, 25 years old, are very rare, and yet at this age a horse may be vigorous and useful. The duration of a horse's life is 30 years, if he is well cared for, and in his old age moderate work may be expected from him. A large proportion of horses are ruined before they are 5 years old by over work, improper feeding, neglect, and abuse. Neglect and improper feeding find more victims than over-work, for if a horse in his prime is properly fed and cared for, he can scarcely be hurt by steady work.

Feed Should be Given regularly as to time and quantity. A horse has a comparatively small stomach. Five pounds of cut hay, and three quarts of ground feed, should make a full feed for a large horse. Horses that are worked on the road at more than a walking gait, should have the hay reduced to 3 pounds and have 4 quarts of the feed. If the feed is moistened with water, give no drink until an hour after feeding, and none immediately before.

Good Grooming is necessary to good digestion and health. The functions of the skin are very important. The skin is an excretory organ as well as one which affords covering and protection to the muscular tissues. Cleanliness of the skin is as necessary for the health of a horse as for that of a man. The skin exfoliates or throws off in scales the used up portion, and this dusty matter should

be brushed out of the coat. The irritation by the brushing stimulates the skin, and assists this healthful action; but the irritation should not be too severe. A moderately hard brush is preferable to a hard, sharp curry-comb.

Provide a Card for the Cows, and use it at least twice a week; remove all adhering filth every morning, and keep the feet clean; else sores will very probably occur between the hoofs.

Incoming Cows, more especially those that are high-bred and have been well fed, should be judiciously starved for two or three weeks previous to calving, and for a week after it. Feed such cows only dry hay, or partly hay and partly cut straw, with a little bran and a handful of salt. The milking of an incoming cow just previous to her calving, should be avoided, as tending to unduly stimulate the organs and produce the very trouble that is sought to be prevented.

Calves and Yearlings, and cows and oxen as well, when infested with lice, should be freed at once by rubbing the skin with a mixture of sweet oil and kerosene in equal parts. During the winter young animals should be kept growing by means of nutritious food, good shelter, and cleanliness.

Separate Stock into different grades; or feed these at different times if separate yards are not provided. Strife and worry at feeding times should be prevented by these or some other means.

Sheep require a plenty of fresh air. Their warm coat protects them from the cold, and if they have a dry yard, they are better out of doors in fine weather than in a close shed.

Water should be provided in abundance for all the stock, and that drawn from a well is preferable to any other. It is not only purer, but—what is of importance—it is comparatively warm and does not chill the animals. No animal should be compelled to eat snow for drink if it is expected to thrive.

A Pump that will not Freeze, should be placed in every barn-yard. Blunt's non-freezing, out-door, iron, universal pump, surpasses any other we know of for this use or for the house yard. It may be placed over a cistern or a well; however deep it may be, it cannot freeze, and it has an effective device for aerating the well. It can be used as a force pump, and by means of a hose, water may be carried into any of the stables, yards, or pens.

Swine intended for pork should by this time have been fattened and disposed of. Store pigs, if well-fed and housed, will make good growth all through the winter. Nothing helps them to thrive more than slightly warm feed given often. Growing animals should not be gorged with food. A light meal, given four times a day, is better than two heavier ones. It is very easy to over-feed young pigs, and cause indigestion and stoppage of growth.

Grade Pigs are preferable to any pure bred ones for the farmer. As a rule, it will be found a mistake for a farmer to keep pure bred animals except males to produce grades. High-bred animals are nearly always smaller and more finely organized than their grade progeny. Their greatest value consists in producing an improved progeny from our common stock. This is large in size, and in every way more valuable for the market or for home use than the pure bred sire would have been. In no kind of stock is this fact more manifest than with swine. No matter what kind of breed of pigs is kept, this rule will hold good.

Brood Sows, coupled this month, will have pigs in May, which is an excellent season for the pigs. The weather being then warm, and the clover in fine condition for pasturing, the young pigs will make a rapid growth, and will soon surpass those farrowed two or three months earlier, unless cared for in a better manner than is usual. By all means, procure a pure bred boar.

Poultry.—The egg-basket can only be filled now, by giving warm feed and providing a warm, dry house. Clean out the roosting places every week.

Disinfectants.—Deodorizers are not always disinfectants, but nevertheless as many of these substances absorb or neutralize what would—if neglected—soon become infectious matter, they may be

practically classed as disinfectants, and should be used as such. Those most easily procured, and the most useful, are ground gypsum, sulphate of iron, (copperas), and sulphuric acid, largely diluted. Any one of these *should* be used in every manure cellar, and is to be recommended for stables, pigpens, cow-sheds, and poultry-houses. The gypsum may be scattered freely about the floors, or thrown upon the manure; the copperas should be dissolved in water, at the rate of 10 pounds to the barrel of the latter; the sulphuric acid mixed with water in the same proportion, and the liquid scattered over the floors or upon the manure.

Leisure Time should be usefully employed. The winter is the time for study and reading. This is work of the most useful and profitable kind. Many of the most intelligent farmers set apart a certain portion of their yearly income for the purchase of books and papers, and certainly no money can be put to a better purpose. In choosing these, the necessities of the mother and daughters should not be neglected, but should be provided for. The success of the farm largely, and the comfort of the household almost entirely, depend upon women's work, and the women should be provided with means for doing their work most effectively.

Notes on Orchard and Garden Work.

In whatever occupation one may be engaged, he is more ready at the beginning of a year, than at any other time, to look forward and lay plans for the future, and also to receive the suggestions of others. It is a good place here, at the beginning of the year, to answer numerous letters that have been written, and to anticipate others that no doubt are in contemplation, in reference to horticulture as a business. The horticultural novels of a few years ago, of which "10 Acres Enough" was the forerunner and the type, have done a world of harm, by conveying the idea that one, brought up to a city life, or to some mechanical trade, can, with great ease, drop into the cultivation of fruits, vegetables, or flowers, and at once reap large profits in the easiest and pleasantest manner possible. Such teachings are wrong, because they are false. If there is any money to be made out of *cultivating the earth*, whether the crop be wheat or strawberries, Indian corn or cauliflowers, without *work*, hard work, and a plenty of it, we have never happened to learn what the crop is, or where it can be raised. That orcharding small fruit culture, market-gardening, or raising cut-flowers may be made, in many localities, a profitable business, we are fully persuaded, but each one of these requires not only physical labor, and much of it hard work, but one must bring to it, if he would succeed, just that mental activity, and that care and forethought which are needed for success in any other business. If there is any "royal road to riches," it does not lie through an orchard, a garden, or a greenhouse. We would say nothing to deter any one from undertaking any branch of horticulture as a business, but we would dispel the notion that those who have not sufficient energy, skill, application, and tact, to carry on other kinds of business, are any more likely to succeed in these.

"Manuring with Brains" has passed into a proverb, and, like most proverbs, conveys an important truth. The present is the season in which, of all others, the cultivator can best apply "brain manure." Those of us who have kept the run of horticultural and agricultural journalism, and literature, for the past quarter of a century, have seen a marked change in one respect. We rarely hear sneers now at "book-gardeners" and "book-farmers." Experience of real value is not thought to be worth any the less, if recorded in the type of a journal, and if the same matter is presented in the form of a book, if likely to be useful, it meets with ready purchasers, even from those formerly opposed to "book-farming."

As editors, it becomes a part of our duty, if not to thoroughly read, at least to know something of the works published both at home and abroad, and leaving out of question some miserable pieces of job work, where matter is thrown together for the sake

of "making" a book—we have rarely seen a book written by any one who felt that he had something to say, on any branch of horticulture, that did not contain some idea that was worth, to those concerned in the specialty, all the cost of the book. We look upon books, to those engaged in orcharding, in fruit growing of any kind, in vegetable or flower culture, as quite as essential implements, as much tools to be of use in their occupation, as spades, rakes, or other garden tools.

The special works will be mentioned in their proper places, but every cultivator, whether he has to do with acres in field crops, or pints of earth in flower-pots, is engaged with essentially the same materials; the plant, the soil, the air, and water. *Every one* should have an intelligent idea of the mutual relations of these. He should know what a plant is, how it grows, what helps its growth; what is in the soil, and what these constituents, the air and the water, have to do with the plant. We can not do a better service to every intelligent gardener, orchardist, or other cultivator, who would understand the first principles, which underlie all the rest, than to commend to him, whether young or old, a careful study of "How Crops Grow," and "How Crops Feed," by Prof. S. W. Johnson. Not only for study—and whoever masters these works the coming winter will have made a great step towards a "liberal education" in his calling—but as works of reference, they will be found invaluable.

But to the cultivator, in whatever branch, there is another kind of literature to which we would commend him. Works easily to be procured, and, as a rule, worthy of careful consideration—the Catalogues of those dealers in articles belonging to each line of culture, and of those who furnish needed accessories. Do you propose to water your garden? Study the catalogues of the Steam and Hand Pump-makers, or those who furnish Water Rams. Does the stock of tools need replenishing? One can not afford to ignore the improvements of even a single year, and the drills, cultivators, harrows, and improved implements generally, may be a useful—as it will surely be an interesting study. So with fertilizers, the literature of which should be carefully considered. If one is to plant trees, vines, or other fruit-bearing plants; if he is to sow seeds, if he is to be in the fashion with flowers as a business, or if he is to plant, sow, or cultivate anything, whether for profit or for amusement, on a large or a small scale, he will find the catalogues, each in its way, of the greatest help.

"Line upon line, and precept upon precept," is as necessary in horticulture as in higher teachings, and though these Notes are always written afresh, without reference to what has been said in former years, we should be neglectful of our duty did we not repeat some things which have already been said, more than once, and which will be said again and again, by whoever may speak through these columns to his fellow workers.

Each year's experience shows that the only trustworthy label, is *none at all*. That is, every tree, vine, or permanent plant, should be so recorded by its position, that though labels may be lost, though the memory may fail, and what is quite as important in this changing world, though our place may come into the hands of another, the names of each tree or plant should be so recorded that one can readily refer to it himself, and that another will have no difficulty in finding the name. It is a very simple matter; and for safety, there should be a permanent record, from which an abstract may be transferred to a small book, to be carried in the pocket. Ours runs something thus:—"Road from barn east to avenue." "First row south, beginning east end of row;" 2, Beurre 'd Anjou; 4, Duehesse d'Anjouleme; 1, Belle Lucrative, and so on. Then second row south, is recorded in a similar manner. By the use of a few permanent landmarks, all the trees are readily recorded. Strawberries with us, run in strips across the garden, and to prevent running together, are 10, 20, or more feet apart, wherever there is a convenient place. A record of the rows, counting from the barn road, tells the story. The vineyard is a square block, but it is recorded in the same manner, by points of the compass. This matter of record is one of so much im-

portance, as well as convenience, that we are warranted in enforcing it upon every cultivator.

Another repetition, is the importance of ordering early, whatever is to be bought and will be needed, as soon as the season opens, whether trees, plants, seeds, or implements. It is better to order trees in March than in May, but a great deal better to order in January than in March. We have almost no spring. It is generally a jump from winter to summer. In every well-regulated nursery, seed-store, or implement factory, orders are entered by the date on which they are received, and filled accordingly. If trees are ordered now, they will be among the first taken up and sent; they will not start to grow in the nursery rows, or heat if long in transit, and there are similar advantages to be gained in ordering early from dealers in other articles.

In these suggestions at the beginning of the year, we have in mind the fact that whoever starts well ahead of the season will be likely to keep ahead of it. The market gardeners, when they would speak of one who is slack, and always just a little behind his work, say "he lets his pussley get ahead of him." This has a wider application than in the market garden, and in leaving these General Notes to give some brief special ones in the different departments, we wish our friends, in every branch of horticulture, a successful year—and may none of them find that their "pussley" is getting the better of them.

Orchard and Nursery.

"*Brain Manure*,"—The orchardist, quite as much as any other tiller of the soil, needs that fundamental knowledge to which we have referred above, and which we have stated is no where so well furnished in any language as in Prof. Johnson's "How Crops Grow," and "How Crops Feed." He also needs works which shall instruct him in the manipulations of his occupation, and we do not know of any one work which is so full of just the information he needs, to aid him starting anew, or to keep at hand for daily reference, as

"*The Fruit Garden*," by Patrick Barry.—We have often thought that the title was unfortunate, as it hardly gives an idea of the scope of the work. In the present subdivision of horticultural pursuits, we apply the name "Fruit Garden," to a ground more especially devoted to small fruits, while this is by far the most comprehensive work on

Fruit Culture in General, that we know of. There are some French works that compare favorably with it in some respects, but we know of no English work that is at all its equal. It begins at the beginning, and teaches in the plainest language, and with abundant illustrations, every step from raising the stock, budding or grafting it, planting it in the orchard, caring for and pruning it, to gathering the fruit, and besides this it gives a list, with brief descriptions, of the most generally useful varieties of each fruit. While of equal value throughout, that which distinguishes this work from all others, is its minute directions for the details of

Nursery Practice.—It is no disparagement to other establishments, to say that the nursery of Ellwanger & Barry is the largest in the country, and one of the oldest. In his "Fruit Garden," while Mr. Barry gives the management and principles which have been found successful in practice on the large scale, required in a commercial establishment, he does not forget the wants of the amateur. One of the best features of the work is the freedom with which, what some smaller men regard as "trade secrets," are told, and one feels that nothing is withheld, for fear some one else may know as much as the author. Next in general utility we place

"*The American Fruit Culturist*," by John J. Thomas, to which much of what we have said about Mr. Barry's work will apply. Though it is not so full in nursery details, its larger descriptive list of fruits may make it desirable to those who do not care so much for growing the trees, as they do for them after they come from the nursery, and their future management and culture. The work by Doct. John A. Warder, entitled

"*American Pomology*," which has not, unfortunately, gone beyond apples; it is rather unfortunate

also in its title, as the volume is largely devoted to the nursery details for which we commended Mr. Barry's work. It is the only work that we know of which gives the rapid, labor-saving management of the Western nurseries, and its chapters on general operations are the results of the observations of one whose opportunities have been abundant, and of a long and successful experience. The peculiarly Western varieties of apples, are described in full, as are all others in general cultivation.

Downing's "*Fruits and Fruit Trees of America*,"—Many will wonder why this was not placed first upon the list. As a treatise on pomology, a record and descriptive account of all the fruits in cultivation, it is invaluable, but other works are better suited to the general farmer, and the orchardist whose operations are limited.... Those who devote themselves to the cultivation of some particular fruit, should have the works devoted to it. Warder's has been noticed as a special treatise on apples.

Peach Culture has methods and requirements unlike those of ordinary orchards, and these are given in Fulton's "*Peach Culturist*," in which the management of the great peach orchards in Delaware and Maryland is given in full detail.

"*Pear Culture for Profit*" is the title of another valuable special work, by P. T. Quinn, who, having cultivated pears largely, and made them profitable, tells how he did it, and the kinds he grows.

Orchards Old and Young, in the Northern States, need such care as is mentioned in last month's Notes.... Protect trees, especially young ones, from intruders of all kinds.... Trample the snow around young trees to prevent mice from working at them.... Smear the trunks, especially of young trees, with blood, or rub them with bloody flesh, to keep off rabbits.... Cut away clusters of eggs of the Tent Caterpillar, whenever seen near the ends of the twigs. These are the chief points, and it is necessary to observe them all through the winter.... Cions may be cut, labeled, and stored in damp saw-dust, or sand.... Cart manure to the orchard.

In the Southern States manure and shallow plowing the orchard may be done. In many localities this is the most favorable month for planting, pruning, and other spring work.

Those who have the volume for last year (1877) will find in the Notes for January suggestions about varieties that will be of aid to the inexperienced.

Fruit Garden.

It may be necessary to say to our new readers that under this head we place what are known as "small fruits," including grapes, and the dwarf forms of the larger fruits, such as the amateur grows in the garden rather than in the orchard. For the cultivator of these, there is a number of special works, while most of the

General Works, mentioned under "Orchard," include the small fruits also. The "Fruit Garden," by Barry; "American Fruit Culturist," by Thomas, and Downing's "*Fruits and Fruit Trees*," all treat of small fruits in a satisfactory manner. Of general treatises on fruits of this class:

"*The Small Fruit Culturist*," by A. S. Fuller, is the chief and most complete. Its excellence is attested by its large sale, and its translation into his own language, by one of the most eminent of German pomologists—Dr. Lueas.

"*Manual of the Culture of Small Fruits*," by E. P. Roe, is a brief compendium, giving the author's experience and methods, and is eminently sensible and useful. In the way of special treatises,

Works on the Grape Vine are the most numerous. "The Grape Culturist," by A. S. Fuller; "Mohr on the Grape Vine," Chorlton's "Grape Growers Guide," and "My Vineyard at Lakeview," are the leading works.

Strawberry Culture is included in Fuller's "Small Fruit Culturist," and he has besides a special work, "The Illustrated Strawberry Culturist." "Strawberry Culture," by Morrick, is another special and useful work, giving New England methods.

Cranberries belong among the small fruits, but their culture can only be profitable in certain locali-

ties, and is so peculiar as to require a special work. "The Cranberry Culturist," by J. J. White, gives every needed detail, and is a model of excellence and completeness in the way of a monograph.

Dwarf Fruits.—Apples, pears, and other fruits, which usually grow upon large trees, may be dwarfed, and trained in the pyramid or bush form, only a few feet high. They give, for their size, large crops of the finest fruit, and the amateur, whose grounds are small, will find their culture full of interest. The works on general fruit culture, already mentioned, especially Barry's "Fruit Garden" treats of these, while "The Miniature Fruit Garden," by Thomas Rivers (England) is especially devoted to dwarf trees.

Work in the Fruit Garden was sufficiently indicated last month. If the strawberries have not been covered, do it at once. Draw manure to where it will be wanted. Take advantage of mild spells to finish up pruning of grape vines, currants, etc.

In the Southern States soil may be prepared and planting may be done in many localities.

Kitchen and Market Garden.

In no kind of cultivation is success so dependent upon the abundant manuring of the soil as here, and in no other department does "Manuring with Brains" tell better. The appearance of

"*Gardening for Profit*," by Peter Henderson, was an important event in garden literature. It was the first work that told the story of those who raised vegetables for profit. It told the whole story without any mental reservations, and its success and its usefulness have been unequalled. While written to give the methods followed by market gardeners, it is a work that every private gardener should have.

"*Money in the Garden*," by P. T. Quinn, and "Farm Gardening and Seed Growing," by F. Brill, while they cover similar ground, are in many respects quite unlike "Gardening for Profit," and both valuable to the cultivator.

"*Gardening for the South*," by W. N. White, has its scope indicated in its title, though its usefulness is not limited to the Southern States. A number of garden crops are often cultivated on the large scale, and for those who would grow these, works on

Special Crops are prepared. Among the prominent works of this kind are, "Onions, by 17 Practical Growers;" "Onion Raising," by Jas. J. H. Gregory; also works by Mr. Gregory on Squashes, on Cabbages, and on Carrots, and other roots. There is a special work on "Potato Culture," by Compton. These and other small treatises are of great value to any who propose to undertake the special cultures of which they treat.

"*The Vegetables of America*," by Fearing Burr, is an instructive history of the origin and varieties of the various vegetables, including the rarer kinds, and a valuable work of reference.

Work in the Garden consists in looking after the stored crops, that no injury may come from freezing, or from heating on account of too close covering.... Cold-frames need daily care; give air on all but the very coldest days, and when the temperature is up to 30°, or above, remove the sashes in part or entirely.... Manure heaps must not overheat, nor get so much chilled that fermentation will not go on; turn over the pile when too hot, and give water if at all dry.

In the Southern States hot-beds may be started for early vegetables; early potatoes planted, in light soils, and the seeds sown of such hardy vegetables as beets, turnips, spinach, peas, and lettuce—provided the soil is in proper condition.

Flower Garden and Lawn.

Those who propose to improve their places, without calling in the aid of a landscape gardener, will find the elaborate work of Mr. Weidenman,

"*Beautifying Country Homes*," a most useful guide, as it furnishes a great variety of plans, and gives practical suggestions of great value.... Downing's "Landscape Gardening" is a standard work on the principles of the art, and others are given in the Publisher's book list. As a general guide for the

Management of Small Places, such as grounds in cities and villages, "Gardening for Pleasure," by Peter Henderson, will meet the wants of many, as it includes in one volume directions, not only for laying out the ornamental grounds, but for the management of the fruit, vegetable, and flower gardens. The best work on what may be called

Old-Fashioned Gardening, is Breck's "New Book of Flowers," in which the author talks about the usual hardy and tender flowers and shrubs in the pleasing and familiar manner of one who loves them.

Ornamental Flower Beds, and the planting of flowers and foliage in masses, are treated in "Practical Floriculture," and "Gardening for Pleasure," both by Peter Henderson.

Tree Planters will find in "The Book of Evergreens," the best work on evergreens in the language. It also treats of evergreen hedges.

Special Treatises, such as "Parsons on the Rose," and others, will be found in the book list.

Work in this Department consists in keeping everything in order, and in preventing injury from animals, and those thoughtless people, who disregard paths when snow is on the ground, and drive or walk "across lots." The manner of preventing injury to evergreens by snow, is given on page 22.

Greenhouse and Window Plants.

For the culture of plants under glass, whether in the greenhouse or in the window, the most generally useful works are "Practical Floriculture," and "Gardening for Pleasure," by Peter Henderson, the first named being more especially for those who cultivate flowers for sale, though the wants of small growers are not overlooked, while the other, intended especially for amateurs, gives more space to the window cultivation of flowers.

Window Plants should by this time be in flourishing condition; their health may be promoted by a thorough showering at least once a week; when the weather will allow, they may be set out doors; otherwise in a bath-tub or sink, and showered copiously, to remove dust. The hints as to insects given last month, will be timely so long as the plants remain in the house. Bring pots of bulbs from the cellar from time to time, to have a succession of flowers. Camellias flower best in a cool room, the buds are less likely to drop, and the flowers last much longer; when growth commences, give them a place at a warm window.

Severe Weather.—It happens almost every winter, that there are two or three nights so severely cold that the ordinary heating appliances will not keep the room warm enough to prevent freezing, at least at the window. At such times the plants should be placed in the middle of the room and covered with a sheet, or even with newspapers.

Frozen Plants will often recover if taken to a room where the temperature is just above freezing, and allowed to thaw very gradually. The change to a very warm room would be injurious.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Dec. 12th, 1877, and for the corresponding month last year:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.									
25 d's this m'	4,116,000	3,491,000	383,000	1,312,000	1,407,000	26 d's last m'	3,941,000	3,516,000	403,000
25 d's this m'	1,394,000	1,214,000	1,303,000	25 d's last m'	1,394,000	1,214,000	1,303,000	25 d's this m'	1,394,000
25 d's last m'	1,394,000	1,214,000	1,303,000	25 d's this m'	1,394,000	1,214,000	1,303,000	25 d's last m'	1,394,000
25 d's this m'	1,394,000	1,214,000	1,303,000	25 d's last m'	1,394,000	1,214,000	1,303,000	25 d's this m'	1,394,000

SALES.									
25 d's this m'	4,116,000	3,491,000	383,000	1,312,000	1,407,000	26 d's last m'	3,941,000	3,516,000	403,000
25 d's this m'	1,394,000	1,214,000	1,303,000	25 d's last m'	1,394,000	1,214,000	1,303,000	25 d's this m'	1,394,000
25 d's last m'	1,394,000	1,214,000	1,303,000	25 d's this m'	1,394,000	1,214,000	1,303,000	25 d's last m'	1,394,000
25 d's this m'	1,394,000	1,214,000	1,303,000	25 d's last m'	1,394,000	1,214,000	1,303,000	25 d's this m'	1,394,000

4. Stock of Grain at New York.									
	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.			
	busht.	busht.	busht.	busht.	busht.	busht.			
Dec. 10, '77.	1,212,704	416,927	43,315	1,125,913	598,703	85,400			
5. Exports from New York, Jan. 1, to Dec. 12.									
	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.		
	bbis.	busht.	busht.	busht.	busht.	busht.	busht.		
1877.	1,306,875	19,833,571	21,276,390	1,992,630	1,936,596	246,355	451,023		
1876.	1,823,050	23,066,295	26,439,741	1,381,939	88,697	618	68,246		
1875.	1,789,299	25,054,038	12,165,741	152,925	1,505	133,754	415,019		
1874.	2,055,423	83,700,159	18,329,781	641,661	3,320	110,381	425,553		
6. Tide-water Receipts at Albany, from opening of navigation to Dec. 31st.									
	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.		
	bbis.	busht.	busht.	busht.	busht.	busht.	busht.		
'77.	29,109	12,713,500	23,651,100	1,282,700	5,530,900	4,228,700	907,500		
'76.	37,100	11,891,100	11,386,600	762,700	2,858,000	3,167,900	735,600		
'75.	113,600	11,331,300	8,581,800	250,900	3,833,600	3,108,300	659,800		

CURRENT WHOLESALE PRICES.

PRICE OF GOLD.									
Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.	Nov. 12.
102 5-8	103	103	103	103	103	103	103	103	103
102 5-8	103	103	103	103	103	103	103	103	103
102 5-8	103	103	103	103	103	103	103	103	103

PRICES OF FEED.									
18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00
18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00
18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00

PRICES OF FERTILIZERS.

No. 1. Peruvian Guano 10 p. ct. ammonia standard, 50 tons.									
50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00
50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00
50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00

two-rowed, within the range of 70 @ 78c. per bushel. Some very fancy samples of Canada product have been marketed at extreme figures, as high, in a few instances, as \$1.08 @ \$1.10, prime No. 1 closing, however, at \$1 per bushel, free. Receipts of Grain have fallen off, near the close, through the partial suspension of inland navigation. The arrivals of Flour have been large, notably so of the less desirable qualities of Winter and Spring Wheat Extras, which have been accumulating here and quoted unsettled in price. Speculative control of Wheat and Corn supplies worked against regular trade operations. Cotton has been ruling higher, on a brisk movement, largely on speculation, but closed weaker. Wool has been in fair but not urgent request; and has been quoted generally firm. Hay, Straw, and Seeds, moderately sought after, but variable as to price. Hops have been quite active, in good part for shipment, within the previous range. Tobacco has been quoted steady, on a moderately active call for supplies. Naval Stores and Petroleum were depressed and irregular, but left off more firmly, with a firm demand noted. Groceries have been selling more freely; Sugar and Molasses further receded in price, but the former closed stronger; Coffee higher; Teas unsettled. Ocean freights were quoted lower on free offerings of accommodation, leading to an active business, leaving off more steadily, especially for Breadstuffs, Provisions, and Cotton. Grain rates by steam to Liverpool closed on the 12th of Dec. at 8 1/2 d.; to Glasgow at 8 1/2 d.; to London at 8 1/2 d.; to Bristol at 9 1/2 d.; to Hull at 8 1/2 d.; to the Continent at 9 @ 10 d.; to Liverpool, by rail, 7 1/2 @ 7 3/4 d.; London, by rail, 8 d., per bush. Flour to Liverpool, by steam, 2s. 6d.; London, by rail, 2s. 3d., and by steam 2s. 6d. @ 2s. 9d.; Bristol, by steam, 3s. 3d. per bbl. Provisions by steam to Liverpool, 32s. 6d. @ 40s. per ton; Cotton by rail 5/32 d., and steam at 1/4 @ 1/32 d. Grain, by rail, for Cork and orders, at 6s. @ 6s. 4 1/2 d., and to Continental ports, 6s. 3d. @ 6s. 6d.; Italian ports, 6s. 3d. @ 6s. per quarter.

PRICES OF FEED.									
18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00
18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00
18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00

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50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00
50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00

New York Live-Stock Markets.

WEEK ENDING.									
Nov. 19.	8,568	69	1,593	23,565	38,548	Nov. 26.	9,453	80	1,062
Nov. 26.	9,453	80	1,062	28,839	32,529	Dec. 3.	7,310	72	879
Dec. 3.	7,310	72	879	11,772	31,684	Dec. 10.	11,573	92	1,097

Bees.

A very poor and depressed market marked the opening of the month. The only sustaining influence was that of the demand for foreign shipment, without which, one can not tell to what extreme of lowness prices would have fallen. A gradual improvement, however, is to be noticed, and the month closes with a more healthful market, showing a better demand with some advance in prices. The excessive receipts alone prevented a greater improvement. Extra good Kentucky and Illinois cattle of 1,600 to 1,700 lbs., sold for 11c. for 57 lbs., and 11 1/2 c. for 58 lbs. to the cwt. Medium to good natives, sold for 9c. @ 9 1/2 c. 3/4 lb., and thin steers and oxen, Texans and Colorados, from 8 1/2 c. @ 9c. 3/4 lb.

Milk Cows.

There has been a very poor demand for cows of more than usually poor quality, and these have been in more than usual supply. As low as \$20 has been

paid for cows the past month. Good cows sell for \$65 @ \$70, and are wanted. **Calves.**—Hog-dressed are now arriving in sufficient numbers to affect the price of grassers and live veals. Grass calves sold at the close at 3½ @ 4¼. ½ lb., alive; the best veals brought 9 @ 9½. ½ lb. These prices were an advance, which was gained through the smaller receipts during the month. **Sheep and Lambs.**—Good sheep were never so low in this market as they now are. Mutton is not a fashionable meat, or is not estimated as well as it might be. With present prices, farmers might add to their flocks with profit. The best sheep that have appeared here in some years, sold for 4½. ½ lb., alive, and fine Canada ewes brought 5 @ 5½. ½ lb. Fair lambs ranged from 4 @ 6½. ½ lb., live weight. **Swine.**—The market has been "see-sawing" back and forth during the month, ending where it began, the excessively heavy receipts bringing the scale down rapidly at the close, with a promise of worse to come. Live hogs have been dull at 4½ @ 4¾. ½ lb., and city dressed at 5½ @ 6c. ½ lb.



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, \$1.60 a year; Two Copies, \$3; Three Copies, \$4.20 (\$1.40 each); Four Copies, \$5.20 (\$1.30 each); Five to Nine Copies, \$1.25 each; Ten to Nineteen Copies, \$1.20 each; Twenty Copies and upwards, \$1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid. **Remittances**, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each. **Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each. **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

The German Agriculturist, with its beautiful new cover, and other improvements, is giving great satisfaction. Will our readers please inform their German friends and neighbors of this German paper, issued now for 20 years. It is every way equal to the English edition, with a Special and extra German Department, Edited by Hon. Fred. Münch. Terms, the same as the English edition, with which it may be joined in making up clubs.

Advertisers will find a valuable medium in the *German Agriculturist*. The rates are very moderate, and the paper circulates largely among readers who are not reached through other channels.

Advertisements in numbers entirely unlooked for, crowded in at the last moment, and entirely upset the Editor's plans for several pages of reading matter, which must go over. But these business notices are from "good men and true," and give a good deal of information our readers are interested in. So read through the advertisements, and when writing to any advertiser tell him *where* you saw his advertisement.

N. B.—Please Observe. Take Notice.—It is a waste of time, talent, stationery, and post stamps, to write us a letter and *not sign it* with full name and address. We have no time to devote to nameless people, and the waste-basket receives their letters. Please don't write to ask about advertising "doctors"—we do not know anything about them. Please do not preface your letters with a long apology, stating that you have "never troubled us before." If the inquiry made is a sensible one, it is not "troubling" us. We wish for such, and are glad when they come. If you have taken the paper for five or ten years, and have never before asked a question, we are sorry both on your account and our own. One more request:—Please don't write with pencil, but better that than pale ink. Recollect we have to look through letters by the hundred, and pale ink, or what is worse still, red ink on pink paper is trying.

A Microscope for All. Important Notice!

The Microscope offered to our readers last month, proves to be quite as valuable as we hoped it would be. It is a capital instrument for all the purposes for which it was recommended, and more. We hear of a few who have as yet failed to appreciate its real merits, but we know that comes from lack of experience in using such instruments. We shall try to aid such to a proper understanding of its use. A beginning is made in this paper, (see page 10.)—Many scientific men, and many others familiar with microscopes, have examined this one, and all speak of it with the *highest praise*. We know that when our readers become accustomed to using it properly, it will be a source of much pleasure, and will be turned to practical utility as well.

It costs a good deal more to supply them, than is charged for them above the subscription rates; but this was anticipated, and a round sum set aside by the Publishers to meet the additional expense—the same sum, or more rather, than has in past years been expended upon Chromos for free presentation. And now we want every reader of this journal to have and enjoy one, though it would be a saving of expense if but few take them. Our only regret is that it is not possible to give them outright.

As many thousands of new subscribers are coming in who did not see the last number of this paper, we republish in part, on page 33, the description, etc., of the Microscope, which please read.

Important about the DELIVERY of the Microscopes.

The average cost of delivering one of these Microscopes, with the strong double-cover box needed, is 15 cents, to any point in the United States and the Canadas. We do not add this to the extra charge above the subscription price, and call it 55 cents, because our subscribers come largely in clubs, and all the Microscopes going to one club, can be sent in a single package, unpaid, to some member of the club, who should be designated, and the cost of carriage will be but a trifle on each.—Thus, if 10 or 20 go in one parcel, and the express charges are 25 to 50 cents on the whole, the cost of carriage will be only 2½ to 5 cents each.—We therefore only require the 15 cents when we send them prepaid. *We can not pay this.* There is not profit enough on subscriptions to pay the extra cost of the Microscope above what is charged for them, much less to pay for the carriage also.

We have now a special arrangement with the ADAMS, the AMERICAN, and the UNITED STATES Express Companies, to deliver the Microscopes singly to any point in the United States or Canadas, where they have offices. This arrangement is only temporary, but we hope it may be continued through the winter. They will give us sufficient notice, if it is not continued, to notify our readers in the following number. Where there is no office of any one of these companies, we provide other means of delivery. The terms are:

One Subscriber for 1874 and one Microscope,	{ Taken at the Office or forwarded unpaid,	{ \$2.00.	{ If sent pre-paid,	{ \$2.15.
Two Subscribers for 1873 and two Microscopes,	{do.....	{ \$1.90 each.	{ do.	{ \$2.05 each.
Three Subscribers for 1873 and three Microscopes,	{do.....	{ \$1.80 each.	{ do.	{ \$1.95 each.
Four Subscribers for 1873 and four Microscopes,	{do.....	{ \$1.70 each.	{ do.	{ \$1.85 each.

For terms to large clubs see page 34. The

Order of Delivering the Microscopes, will be in the order of reception of names. "First come, first served." Over 60 men are working on them with machinery. The call is beyond expectation. They will come as fast as made. Let no one be anxious if his Microscope happens to be delayed a few days. It will come in due time sure.

Wintering Cows on Meal Alone, is a subject of much interest to dairymen. The address of Linus W. Miller, read before the American Dairymen's Association, and other meetings, has created much interest in what is now called the "Miller System" of feeding. As innovators upon established customs are apt to be misrepresented (not always intentionally) by their opponents, it is better for those who would investigate the matter, to read Mr. Miller's own presentation of it. This he gives in a pamphlet of 82 pages, which may be had from this office, post-paid, for author's price, 50c.

"The Omaha, Neb., Pioneer," for December, contains much valuable information for those who contemplate emigrating to the West. It is sent free on application to Mr. O. F. Davis, Omaha.

J. B. Root's "Garden Manual,"—The sudden death of J. B. Root, of Rockford, Ill., was noticed just a year ago. He was in his department a leading man, and his contributions to the *American Agriculturist*, and other journals, were marked by great originality, and were valuable contributions to the literature of vegetable gardening. He was largely engaged in seed growing, and the business is now carried on by Mrs. Root, to whom we wish much success. The present issue of the "Garden Manual"—which includes a catalogue—is made up of articles left by Mr. Root, and selections from those that have appeared elsewhere, and characteristically fresh, practical, and sensible.

An Iron Mattress.—Probably the most comfortable of all beds is one of that hardest of substances—iron. Paradoxical as this may seem, we know it, by experience, to be true. Iron in the form of wire may be so woven, netted, and arranged with springs as to make a bed that readily adapts itself to the form, and recovers its shape at once when the weight of the body is removed. We have tried the article made by the "National Wire Mattress Co.," of New Britain, Conn., and find it to be as nearly perfect as a bed be.

The Pennsylvania Fruit Growers' Society will hold its annual meeting at Williamsport, Pa., commencing January 16th, 1878. It is expected that several prominent horticulturists will attend, and address the meeting, and an interesting session is expected. Josiah Hoopes, Westchester, is President, and E. B. Engle, Marietta, Secretary.

The Hessian Fly.—How far does it extend West and South? is what Prof. Packard, Secretary of the U. S. Entomological Commission, would like to know. In order to aid him in studying the distribution and extent of the ravages of this pest to wheat growers, Prof. P. would like specimens from the Middle or Western States. Send so that they will not be crushed, by mail, to Prof. A. S. Packard, Jr., Salem, Mass.

Senders of Papers.—It often happens that one wishes us to see an article he has published in some paper, or to call our attention to some particular article. The most certain way is to cut out the article, giving the name and date of the paper, and send it with the letter. But if a paper is sent for the purpose, please *mark the article* distinctly, by lines drawn against the heading, and also put upon the wrapper "Editorial." Unless these precautions are observed, the paper, among the hundreds that come daily, may never reach us.

The "American Journal of Microscopy," edited by Prof. John Phin, and published in New York, is especially valuable as a means of communication between those engaged in microscopy, and its articles are of a popular character—and not merely for the small class of experts.

The A B C of Bee Culture, is the title of a new Cyclopædia of Apian matters. Part I. contains 48 pages, with 20 engravings, and in the alphabetical arrangement extends to "Comb Honey." It is published at Medina, Ohio, by the author, A. I. Root, at the moderate price of 25c.

New Jersey is a State sometimes sneered at by those who know nothing about it, for its old foggy ways. It easily took the lead at the Centennial Exhibition, and if any other State has published a report of its part in the Exhibition in any handsomer or more complete form than New Jersey, we should like to see it.

To Be Had Without Money.

PLEASE REMEMBER that Our General Premium List, published in October, is still in FULL FORCE, and will be during the winter. Multitudes of our readers, all over the country, can each secure one or more useful and very desirable articles free, by the little trouble required to collect three, four, five, or more, names of those who would subscribe for the Journal if shown to them by some one. Over 20,000 of our readers have received these premium articles, and thousands more ought to get them this month, and during the winter. Every person induced to take and read such a Journal, will be benefitted in the end. The Publishers can not go to individuals to present the paper to them, and they offer these good premium articles as rewards to those who do so. See the list of articles on page 33, and if you have not the Illustrated Sheets describing each article, send immediately for a free copy.

Many persons canvas as a business, receive the premium articles, and dispose of them for cash, (for they are all good and readily salable), and thus realize a fine income. **This Month** is a good time to enter upon such a work.

Take Notice.—The offer of the Microscope to every subscriber, whether in a premium list or not, does not at all interfere with making of lists for premiums, but will rather aid in the work, for every subscriber for 1878 is entitled to call for one of the Microscopes on paying a small extra charge above the subscription price, as stated on pages 33, 34. The Paper alone is worth all that is asked for it. The Microscope is worth to any person much more than the whole cost of both the Microscope and the paper for the whole year.—So push along the gathering names, to secure premiums for yourself, and let all who have it not send a postal card at once for our Illustrated Premium Sheet, which we mail free to all applicants.

The North Western Dairy Exhibition.—The exhibition of dairy products by the North Western Dairyman's Association, was held at Chicago, December 18th, and following days. The exhibition opened with over 2,000 parcels of cheese and butter, from all the dairy States and Canada, and more arrived afterward. President Hewes opened the proceedings with an address, and others followed. The attendance of visitors was large, and the exhibition very successful.

What Scientific Men Say.—Numerous letters and verbal commendations have come from the best practical judges of the real value of a microscope. Among others, **Prof. Phin**, Editor of the *American Journal of Microscopy*, writes, Dec. 11, as follows:

MESSRS. ORANGE JUDD COMPANY:

"I have carefully examined your AMERICAN AGRICULTURIST Microscope, and am delighted with it. Having procured all the lower-priced microscopes offered for sale in this country during the past twenty years, I could not recommend one in my book on the Microscope. This of yours is really good, and shows well all the most interesting common objects. I have just seen clearly, with it, the beautiful globe-animalcule, (so-called), the cellular structure of plants, the trichina or so-called "pork-worms," and several other objects that require good microscopes.

JOHN PHIN."

One of the Most Striking Steel Engravings we have lately seen, is that of **BISHOP JAMES**, in the January Number of the "National Repository." Every lineament of the face is so accurately drawn and printed that the picture is instinct with life. The "Repository," by the way, is a most excellent family magazine, filled with safe reading of a high order. Our old friend, Dr. Curry, who has had long editorial experience, is working well into his new sphere of labor. Not having space for further notice of the "Repository," we refer to the Publishers' announcement on page 32.

The Western New York Horticultural Society, is one of the most useful of the various horticultural associations, and though it, usually, holds but one meeting a year, that one abounds in good results, and we always receive the account of its proceedings—furnished with commendable promptness, with the feeling that we shall surely find something worth reading. While the N. Y. Horticultural Society, holding its meetings and exhibitions in New York City, has florists' plants and flowers as its leading feature, the Western Society gives greater prominence to fruit,

and thus the two admirably supplement one another. The 23d Annual Meeting of the Western N. Y. Society will be held at Rochester, N. Y., commencing on Wednesday, the 23d inst., and probably continue for two or three days. All interested in horticulture will be welcomed, and they are invited to exhibit their products. P. Barry is President, and P. O. Reynolds Secretary and Treasurer—both of Rochester.

Sale of an Arab Colt.—We are informed by Mr. J. J. Parker, of Westchester, Pa., that his Arab colt, "Arab Boy," the portrait of which was published in the *American Agriculturist* for June, 1877, has been sold for \$1,000, to W. C. Myer, of Ashland, Oregon, whose attention was called to the colt by the above mentioned portrait. Mr. P. has long been a very successful importer and breeder of Percheron and Arabian horses.

A Watch-Case Time Table is sent us by the "Dexter Spring Co.," of Hulton, near Pittsburgh, Pa. There does not seem to be any direct relation between the well known carriage spring, called the "Dexter," and a R. R. time table, and we suppose that the "Co." send out these for amusement. It is a little engraved form, to be cut to fit the inside of a watch-case, and ruled so that one can readily write in the time that the cars leave and arrive at any desired point. It is for a hunting-case watch, and when the case is opened, the time and the R. R. schedule are both in sight.

Sundry Humbugs.



To the long-time readers of the *American Agriculturist*, it is not necessary to speak of the aims of this column, but as many new friends always join our circle with the new year, (and this year the number promises to be gratifyingly large), these may need a word on the subject. In the early days of the *American Agriculturist*, an occasional exposure was given of the mock auction and other traps, set by sharpers to catch visitors from the country, and strangers were advised of the tricks practised against them, long before the authorities took up the matter, and broke up this form of swindling. From this small beginning, the exposure of other frauds followed, and the "Humbug Column" soon became a regular and necessary feature of the paper. We say "necessary," because a large share of the fraudulent schemes are directed towards the agricultural community. It is no disparagement to farmers to say this. These sharpers know that men who are so generally honest and upright in their dealings as are farmers, are of all men the least likely to suspect others. This is why such a large share of the swindles are directed towards the rural population; the rogues well understand human nature, and know that men who are honest themselves are slow to suspect others of dishonesty.

THE OBJECT OF THESE EXPOSURES

then, is to warn our readers against fraudulent schemes of all kinds, and especially those directed against the agricultural community. While we fearlessly make such exposures as are demanded by the public welfare, it is to be distinctly understood that these columns can not be used to redress any private grievance, and it will do no good to write, as some do, a request that we show up this or that person as a "humbug," simply because the writer feels that he has been wronged by the party complained of. It is only those who are defrauding the public at large, and whose operations are detrimental to the general welfare, that are entitled to a place here. It has been said that no human ingenuity has been able to construct a lock so perfect that one with a little more ingenuity can not pick and open it. It is the same with laws as with locks, and it does not seem possible for the law-makers to frame a law so well guarded that an acute person can not get around and avoid it. An illustration of this is seen in the case of the parties who have been operating under the name of

RUSSELL & CO.

Circulars, pretending to be at first a settling up of the affairs of the "Louisville Lottery Association" by a supplementary drawing, and later enlarged to include "the Various Legal Lotteries," have been sent far and wide. To judge from the bushels that have come to us, the mails must have been loaded with them. These at first

offered "a Gold Watch and Chain valued at \$150"—to be had by payment of an "assessment" of \$15—and later a lot of "Gold Jewelry" of 80 (more or less) different patterns, "valued at \$280" (more or less), to be had by paying an "assessment" of \$14 (more or less). This has been going on for months, and while we felt that it was the biggest kind of a swindle we could not prove it. All we could do was to warn our readers, on general principles, that people did not, could not, and would not sell for \$15—watches, or anything else, worth more than that sum. Why people, when they receive such an offer, do not at once

TAKE A COMMON SENSE VIEW

of the case, is beyond our comprehension. But they don't. They send these circulars to us by the dozen and hundreds, asking our "opinion." What opinion can we give other than this? "We know of no persons doing business in New York who will give you any more than \$15 worth of watch, jewelry, or anything else, for \$15." Not only were we overrun with these inquiries, but the Police and Post Office authorities had similar applications from all quarters, concerning "Russell & Co.," and their allies, "Hetherington & Co." Though "Russell & Co.," and the others, were watched, so carefully were their plans laid, that the officials could find no grounds for arrest. People at a distance complained, but unless they could make a complaint here, in the courts, in person, nothing could be done; and so the matter went on. Recently, Anthony Comstock, Special Agent of the Post Office Department, has convinced the Department that these parties were using the mails improperly, and his presentation of the case induced

THE P. M. GENERAL TO ISSUE A MOST STRINGENT ORDER, a part of which reads: "I do hereby forbid the payment by the Postmaster of New York City to the said Elias H. Elias, or to any person whatsoever of any Postal Money Order, drawn to the order of Russell & Co., the name used by said parties in the conduct of said scheme." In consequence of this order a large number of registered letters and Postal Money Orders have already been returned to their senders, who, if sensible, will thank the Postmaster General that they have been able to get their money back. It has long been suspected that Russell & Co. was only another name for Elias, and other well known operators in similar schemes. An assertion to this fact was made some time ago in a sensational article in one of the daily papers, but accompanied by no proof; but it appears that the Postmaster General is convinced that Elias is at the bottom of this—one of the most ingenious swindles of the day.

SEED SWINDLES ON FARMERS

are now as numerous as ever, and so important as to require a special article, which we hope to give before seed time comes. We are as desirous as any one can be, of bringing to the notice of our readers every novelty of real value, or which promises to be useful. Three are at present offered under new names, and names likely to deceive, very old plants. If these have any value at all, it is very local and limited, and if the seeds were offered at all, it should be under their proper and well known names. These

WONDERFUL AGRICULTURAL SEEDS

have of late been offered by heretofore unknown dealers in obscure towns in Tennessee, Michigan, and other Western States. Of course it is no prejudice to a good thing that it should have an obscure origin, but the things thus offered are either not good, or are offered under names likely to deceive. Thus "Ivory Wheat" is no wheat at all, but the old Durra Corn, a form of which is offered as "Pampas Rice," while it is no more rice than it is wheat. The "Diamond Wheat," which is offered with much flourish of names, including "Montana," and other kinds of "Rye," is, as we shall show at another time, one of the oldest grains in cultivation. So the "Hulless Oats," as "old as the hills," every now and then turn up as the basis of a disastrous swindle. The "Durra Corn," the "Polish" (though now called "Diamond Wheat," and by many other names), Wheat, the old, very old, "Hulless Oats," all these, almost as old as agriculture itself—many have their uses, but to introduce them as novelties, or under new names, shows, on the part of those who advertise them, either

IGNORANCE OR FRAUDULENT INTENT,

and so far as the purchaser is concerned, it makes no difference which. Let every farmer and gardener be assured that unless a "novelty" in the way of field or garden seeds has the endorsement of some agricultural paper—is either commended by the editor of the paper, or by some correspondents, whose accuracy the editor endorses—let him be sure that he can afford to wait, or if he tries the thing at all, let him do it on a scale so small that failure will be of no serious detriment. In beginning our war against Humbugs, for the new year, we have given prominence to one, the influence of which for evil is shown, by our correspondence, to be the most widely extended, and another month propose

to pay attention to others, which, operating in a smaller way, are none the less pernicious. One of the biggest of

THESE SMALL HUMBUGS,

is one E. C. Abbey, "M. D.," of Buffalo, who advertised everywhere his "Puzzle Picture," the Toll-Gate."—Very innocent indeed is the advertisement.—We saw it in a religious paper, edited by a distinguished "D. D.," whereupon we sent the good Doctor of Divinity the "Toll-Gate" itself. The advertisement did not appear in that paper any more. Now this same Abbey advertises in religious and other family papers his "puzzle picture" of "THE TRUANT BOY," and, like the "Toll Gate," it is a (so-called, but very poor) "puzzle picture" on one side, and on the other side, we have just such an advertisement as went with the Toll Gate, and one which no parent would wish his son to read. The card of the rascal says:—"This picture is 'intended to introduce a far more interesting Book,' (the italics are his), containing new truths never before in print"—* * * with portrait of the author, (Oh!) It tells all about Manhood, Womanhood, Sex, Beauty—well, we can't, in decency, tell the rest. Now you gentlemen who publish religious and family papers, won't you, in the interest of common decency and morality, just send and get a copy of the "Puzzle Picture" which you advertise to the young of both sexes, and who suppose that nothing improper can appear in your pages. Won't you, we say, send and get one of the things you advertise. You will get something which you *dare not* read aloud in your family circle. Yet you invite all to get the vile thing.

IN THE MEDICAL LINE

are several things that must have attention soon. If you get an alarming circular, headed "Diphtheria Suffering and Death," from Honesdale, Pa., put it in the fire, and read what is said about diphtheria on page 25.

THINGS GOOD TO LET ALONE

are a "Wonderful Tea Importing Co.," in Cincinnati.... Likewise the various concerns which are after owners of property in England, Scotland, and Wales, of which, no doubt, "the rightful heirs" are perversely keeping the many Smiths, Joneses, and Robinsons out of.... Also, those Telegraph Schools, which promise good situations at high salaries, are to be investigated before paying for "scholarship."... If any one has money to throw away, there are still several "Mining Companies," notwithstanding the inglorious fizzle of the "Silver Mountain" concern, that will take in all that may be offered.... We can well understand the indignation with which a gentleman doing a respectable business in Connecticut, opened a letter addressed to his recently deceased father, informing him that he (the father) had been recommended to the writer as a "reliable party" to assist in the "disposal of some goods," which "goods" were counterfeit money. If the son had kept the run of our exposure of this worst of swindles, he would have known that no one was safe from vile proposals, and that the few who were caught were most deservedly fleeced.

A Personal Convenience.—We do not know what it is called, but it was sent us by J. S. Birch & Co., No. 38 Dey St., who have so long advertised their "Universal Watch Key" in our columns. The article is about the size of a coat button, and fastens to the vest like a breast-pin. It has a cord, and at the end of the cord a hook, to which the eye-glasses are attached. The cord is taken up within the button by a spring, and the glasses are ready for use, or out of the way in an instant, by the proper management of this very clever contrivance.

The Value of Starch Factory Refuse.—"F.," Ashland, Me. The "slump," or waste from starch factories contains all the substance of the potatoes except the starch. If this waste, along with the vines, is returned to the soil, it is difficult to say why potatoes may not be raised many years in succession upon the same field, without exhaustion. The starch is wholly carbon and hydrogen, which are plentifully supplied by the atmosphere and by water, there is probably a loss of some (but very little) nitrogen in the finer portions of the potatoes which escapes with the waste water.

What Is a Cord?—"J. M. E.," South America, Ill. There are 128 cubic feet in a cord of wood, or a cord of manure; a cord being a heap 8 feet long, 4 feet high, and 4 feet wide. A cord foot is a 32nd part of a cord—that is, it is a heap of wood having a face one foot square, irrespective of its length. A cord of stove-wood consists of 32 cord feet, and if the wood is one foot long, would be a pile 8 feet long, 4 feet high, and one foot wide, containing 32 cubic feet; if the wood were 2 feet long it would contain 64 cubic feet.

Shrinkage of Grain.—The loss of weight and bulk of grain in process of drying, is from one-fifth to one-fourth for corn, and one-twelfth to one-tenth for wheat, and other small grains. In addition to

this shrinkage there is the loss by the depredation of vermin, and that of interest on the value until the grain is sold. The whole amount of loss is a serious item, but one that rarely enters into the farmer's calculation when he determines to hold over his grain until the spring, or next summer, for an advance of a few cents a bushel. Instead of gaining by this, he very often loses, and the loss may easily be figured up to from one-sixth to one-fourth of the crop, or its value, when harvested.

Ringbone.—M. W. Patterson, Clark Co., O. The only cure for ringbone is blistering. The hair should be shaved off from the part, and some common blistering ointment rubbed in. When the blister acts, the part should be washed and sweet-oil applied.

Apples Rot upon the Trees in Mississippi.—N. L. L. asks how to prevent it. The very first step will be to ascertain if he has varieties suited to his climate, and of this nothing is said. Northern varieties, as a general thing, do not succeed, but there is a set of fine Southern apples that do finely in his State. The varieties being all right, we should look first to drainage, and next to nutrition; if the trees are poorly fed, the fruit will complain.

Winter Oats.—"A. A. H.," Cumberland Co., Tenn., writes in regard to Winter Oats, that "they are not so hardy as Winter Wheat, although they are more extensively grown of late than previously." To test this matter, we have procured seed for one acre of these oats, and have sown them: if they succeed we shall report the fact in good season next year.

How to Manage a Farm.—"J. K.," Chicago. We have not space in any one number of the *American Agriculturist* to explain fully how a farm should be managed by one who knows nothing of the business. A pretty good idea could be gained by reading a whole volume, and carefully noting the Hints for Work, and the seasonable articles published every month.

Insects from Spain, sent by "H. G.," were crushed and in fragments beyond all recognition. Even for short distances it is necessary to send insects in a box or something which will keep them whole.

Is Meal Best Dry, or Scalded.—"J. E. W.," Frankfort, Ky. If the labor is not too great, it would be better to scald the meal, rather than to feed it dry. It is less apt to cause indigestion when scalded and fed moist.

How to Burn Lime in Heaps.—"E.," Athens, Ohio. Lime, where there is no kiln, may be burned in heaps, lain up upon a foundation of dry wood and made in alternate layers of wood and limestone. The heap is covered with sods, or coarse hay and earth, as charcoal pits are, and burned in precisely the same manner, except that the fire is made to burn briskly instead of smouldering; the lime is completely burned in three days. Lime may be spread upon the land to advantage in the spring.

When to Sow Orchard Grass.—"E. S.," Athens Co., Ohio. Orchard grass makes the best pasture for early use. It succeeds best if sown by itself on well prepared ground early in spring.

Coal Tar and Coal Ashes.—Coal tar is hurtful to shingle or board roofs, unless it is first mixed with some air slacked lime to neutralize the acid contained in it. Coal ashes have no appreciable fertilizing value.

Shorthorns and Durhams are the same. "J. A. T.," Georgetown, Mass. The Shorthorn cattle were first bred largely in the County of Durham in England, and near the river Tees. Hence they were called Durhams and Teeswater, as the case might be. In a few years they were spread all over England, and the name Shorthorn was given them to distinguish them from the formerly popular Longhorns, and stock that was not thoroughbred. When the Shorthorn Association was formed, and a Herd-book was established, the old names were dropped, except by those who were not well informed about the matter. A few of these keep the old names yet, which leads to confusion.

"Fern Leaf Mottoes."—In these, ferns (which have no "leaves" proper), are made to work in a good cause. Their fronds, and parts of them, are neatly arranged to form such mottoes as "God Bless our Home," and to surround them with a border. Impressions of these, fixed by photography in black and white, form very pretty ornaments. They are sold in considerable variety, solely where they will aid in the work of both

foreign and home Missions. Particulars may be had of Mrs. J. R. Nicholas, Darby P. O., Philadelphia, Pa.

Catalogues Received.

The catalogues of seedsmen, nurserymen, florists, etc., are not usually ready before February. We give those that have thus far come to hand, placing them, as usual, in order not to give one precedence of another, in alphabetical sequence.

NURSERYMEN.

G. H. BANTA, Riverdale, Bergen Co., N. J., offers at the Glenwood Nurseries a general assortment of fruit and ornamental stock.

SAMUEL C. DeCOU, Moorestown, N. J., makes a specialty of small fruits, offering the latest novelties.

A. HANCE & SON, Red Bank, N. J., send both their wholesale and retail list of a full and varied stock, with many novelties and specialties.

R. S. JOHNSTON, Stockley, Del.—A general nursery stock, with several new peaches.

RANDOLPH PETERS, Wilmington, Del., at the "Great Northern and Southern Nurseries" offers a very large stock. He makes a specialty of peaches, and his list and its classification is an interesting study to all proposing to plant peach trees.

E. WARE SYLVESTER, Lyons, N. Y., sends an abridged but comprehensive list of fruit and ornamental stock.

SEEDSMEN.

WM. H. CARSON, 125 Chambers street, New York City.—Special circular describing the Egyptian or "Pearl" Millet, a new "Spiral Mignonette" and other novelties.

DAVID LANDRETH & SONS, Philadelphia, Pa., send their "Rural Register and Almanac," including a catalogue of the seeds raised and sold by this well known firm.

J. B. ROOT, Rockford, Ill.—The Garden Manual for 1878, and Seed Catalogue—the business of seed growing and selling being continued by Mrs. Root.

CHARLES SZER, Mount Lebanon, Col. Co., N. Y., is quite early with his "Shaker's Catalogue and Amateur's Guide to the Flower and Vegetable Garden." The catalogue is neat, full, and well illustrated.

E. WYMAN, JR., Rockford, Ill., is out with his catalogue of flower and vegetable seeds for 1878, the flower seeds predominate, and good cultural directions given.

FLORISTS.

WM. E. BOWDITCH, 645 Warren street, Boston, Mass., offers greenhouse plants and seeds.

L. B. CASE, Richmond, Ind., issues a "Botanical Index," quarterly, as a combined magazine and catalogue.

J. C. McCONNELL & Co., Jacksonville, Ill., have a very full stock of greenhouse and bedding plants, roses, bulbs, and florists goods.

HENRY A. DREER, 714 Chestnut street, Philadelphia, Pa., though perhaps best known as a seedsmen, sends a separate catalogue of greenhouse and other plants, showing that his stock in this line is very large and up with the time.

EUROPEAN CATALOGUES.

WM. BRYCE & Co., Glasgow (Scotland), and London (England).—A wholesale price list of vegetables and agricultural seeds.

LENAULT-HUET, Ussy, France, W. L. Ferris & Co., Poughkeepsie, N. Y., agents.—A general nursery catalogue, the English of which is very Frenchy, but the collection is a fine one.

WATTE, BURNELL, HUGGINS & Co., London, (Eng.), and Paris, (France). This one of the great seed houses of Great Britain, has now a branch house in France. Besides a wholesale price current of seeds of all kinds, they send a special list of Lilies, Gladioluses, (they have it "Gladioli") and other spring bulbs.

WILSON & RANKIN, Glasgow (Scotland).—A wholesale list of farm and garden seeds, very full in the grasses.

MISCELLANEOUS.

E. WEBSTER PECK, 110 Chambers street, N. Y.—Scroll saws, designs and materials, and ornamental iron work, including aquaria, ferneries, etc.

GEORGE SUCH, South Amboy, N. J.—A price list of cream-colored flower-pots, including very large sizes.

TRUMP BROS., Wilmington, Del.—Scroll saws of several patterns, and all the appliances and materials belonging to the art of scroll sawing.

RACINE HARDWARE MANUFACTURING Co., Racine, Wis., issue a handsomely illustrated catalogue of the ornamental and useful articles made by them.

MACHINERY, IMPLEMENTS, ETC.

C. & G. COOPER & Co., Mount Vernon, O., send their 42d Annual Catalogue, which indicates that this is no new concern. They make a great variety of agricultural and other steam engines, mills, and other machinery.

GEO. W. RUE, Hamilton, O.—A catalogue of his popular potato diggers, his seed drills, etc.

STEDMAN & Co., Aurora, Ind., offer a great variety of engines, boilers, mills, presses, and other agricultural machinery.

J. W. STODARD & Co., Dayton, Ill.—An illustrated account of the "Tiger" Snaky Hay Rake.

THE FARMERS FRIEND MAN'G Co., Dayton, Ohio, issue a neat pamphlet, giving a detailed description of their Grain Drill, and illustrate the peculiar excellencies claimed for their machine.

THE MANSFIELD MACHINE WORKS, Mansfield, Ohio, send illustrated catalogues of their Agricultural Steam-Engines, Saw Mills for farm use, Grist Mills, and other agricultural machinery.

THE STRAUB MILL Co., Cincinnati, O., make the "Gladstair" Corn Shelter of different sizes.

YALE IRON WORKS, New Haven, Conn., make the "Yale Steam Engine" in various forms, also the "Yale Vertical Mill," a grist mill of novel construction, the merits of which were explained in these pages several months ago.

Bee Notes for January.

BY L. C. ROOT, MOHAWK, N. Y.

Bees wintering in-doors should be left entirely undisturbed as heretofore directed. The hives out of doors should have their roofs or other covering removed during pleasant days, that the sun may shine directly on the hive, to dry up the moisture, and free the hive from frost. A board should be placed before the entrance to keep off the rays of the sun, so that the bees may not be induced to fly. In all operations avoid the least jar, if possible, as here, as well as in-doors, the most perfect quiet is essential to successful wintering.

Questions and Answers.

VENTILATION.—"How much upper and lower ventilation should the box and frame hives have, while in winter quarters, with the temperature at 45°?"—"If mats are placed over the frames, they will need no other upward ventilation. Box hives should have an inch hole in the top. An entrance so arranged that it cannot become clogged is sufficient for lower ventilation.

"SHOULD THE FLOOR OF A BEE CELLAR BE MADE OF CEMENT?"—Yes. It is, for several reasons, preferable to any other; and the sides of the cellar should also be cemented as high as the surface of the ground.

"WOULD YOU ADVISE A CONSTANT FIRE IN THE ROOM ABOVE A BEE CELLAR?"—Yes, unless the cellar becomes too warm in consequence.

"CAN LARVÆ SENT FROM ONE TO TWO HUNDRED MILES BY MAIL, BE DEPENDENT UPON TO REAR QUEENS FROM?"—"If sent under most favorable circumstances, it might prove successful, but I would much prefer larvæ taken from a hive nearer at hand.

"HOW EARLY IN THE SEASON CAN TESTED ITALIAN QUEENS BE PURCHASED?"—"As soon as the weather will admit of their being shipped. I would not advise securing them before May in this latitude.

"IS IT BEST TO FEED POOR COLONIES BEFORE COLD WEATHER SETS IN?"—"All feeding should be done before cold weather.

About the Microscope.

Plain Instructions about Using It, important to All, especially those Unaccustomed to handling Microscopes.

Among the many thousands who have it already, or will receive the *American Agriculturist* Microscope, it would not be surprising if a few should fail to derive from it the interest and instruction of which we know it to be capable. In deciding to supply our subscribers with the instrument, the difficulties that would be encountered through the inexperience of some of those who would receive it, were foreseen; to meet, and even to anticipate these, we prepared a descriptive circular to go with each instrument. This points out the method of making several convenient appliances, to increase the utility of the Microscope, and points out some of the various uses to which it may be put. Every person receiving the Microscope should not fail to go carefully through the six descriptive pages accompanying it, before attempting to use it. The following explanations will be specially valuable to many.

In our interviews with those who have called at the office for their Microscopes, and in noticing the manner in which they handle them, we find that our descriptive article does not entirely meet the case of those who have never had occasion to use a microscope of any kind, and we find that there are many such, and even those quite unfamiliar with the uses of an ordinary magnifier. It is necessary, then, to give even more elementary directions as to its use, than those given with each instrument.

The Microscope was described in detail, with illustrations, in the Dec. Number of the *American Agriculturist*.

This is for the aid of those entirely inexperienced, and we will suppose that the Microscope comes (as in many cases it will) to an intelligent person who has never happened to see anything of the kind before, and who, if he ever chanced to look through a magnifying glass of any kind, never gave the matter any special thought or attention. He takes the Microscope out of the box, and

He Should First Examine Its Parts.—In the first place there is a base of hard rubber, which supports all the rest, and in the center of this base, covering an opening, is a round plate of glass, called the *Stage*. Attached to the base are two metallic *Clips*, or curved springs, and these hold down two *Slides*, or plates, of glass, with a perforated water-proof plate (*cell*) between them. These, the two plates and the piece between them, he may pull out from under the clips, and put aside for the present. There will then be the base with its

glass stage. From the base there arises an upright rod, upon which slide the *glasses* or *lenses*. Of these there are three, joined together, which may be turned about and moved up and down upon the upright, they may be used as one lens, or they may be separated, and each used singly. Between the lowest lens, and the middle one, is a flat plate of hard-rubber, having a round hole in the center. This is called a *diaphragm*, which will be mentioned presently. Engravings showing the Microscope will be found with the general description on page 34. Having noticed all these parts, and seen what the instrument is, the next thing is to

Learn How to Use It.—A microscope is to magnify something, and that something, whatever it may be, is called an *object*. For the present purpose, a little practice, in order to get "the hang" of the instrument; some fine print will answer as well as anything, and is everywhere at hand. The size, or kind of type in which this is printed is called "Nonpareil," and some of the same can be found in almost every newspaper. Having found print of this size, cut out a bit, say an inch square, place it on the *stage* of the Microscope, slipping it under the spring clips. Set the Microscope on the table at a window where there is full day-light, (not direct sunshine), or if at night where a good light from the lamp will fall upon the paper, and not be shaded by the hands or a hat rim. Separate the glasses so that only the upper, larger one will be directly over the *object*, which in this case is the scrap of printed paper; turn the other glasses to one side. Now bring the eye near the glass, and look down through it at the print. Perhaps it will be blurred and indistinct. If so, raise the glass, by sliding it upwards. Raise or lower the glass until you find the light at which the printed letters look the largest, and at the same time the most clear and distinct. This will bring the glass near, or quite, to the very top of the upright, as its length is adapted to this. Now you have found the proper *focus* of the upper glass. Observe, that you can, without moving the eye, see 6 or 8 lines of the print, and a corresponding width. The space that can be distinctly seen is called the *field* of the Microscope.

Some, when they look through a glass, put the hand over the eye not in use, and most persons close the eye. With a little practice, the mind learns to concentrate on the work of one eye, and the other takes care of itself.

Having noticed the print, and the imperfect letters, without lowering the glasses, turn away the upper glass, and bring the second one in its place over the *object*, and look at the print as before. Very likely the letters will appear indistinct, and to see them, as clearly as possible, it will be necessary to push the glasses down upon the upright a little. To get the *focus* of this glass, (which is necessarily lower than the first one), we bring it nearer the *object*. We see that it has a *shorter focus* than the other. It will be seen that the letters look larger, and, with the eye at that distance from the glass where they look the largest and clearest, but 4 or 5 lines of the print can be seen without moving the eye.

Now turn the middle glass away, and put the lowest one in its place. To get a clear view of the letters, this glass must be pushed down still nearer to them, they will look much larger, and only three of the lines can be seen.

By this trial of the three glasses separately, it will be seen that the longer the focus, the less the magnifying power, and the larger the field, or the more can be seen. The higher the magnifying power, the shorter the focus, and the narrower the field—points of importance to keep in mind. In these trials each glass has been used singly.

Let us now put all the glasses together, leaving the *diaphragm* out at one side, and use the three as if they were a single glass, putting them evenly over each other. To get the *focus*, so as to see the letters most plainly, the glasses must be pushed down much lower than with either singly—so that the lowest is within half an inch or so of the *object*. With this *short focus*, we shall expect, according to the principle just stated, to find a smaller field. You can now see distinctly only the letters of a single line. Then with the short focus and narrow field, the magnifying power should be much increased. See how ragged and broken the letters look, and the fibres of the paper are distinctly visible! With the glasses thus placed the letters of only one line are plainly seen, and but about three of these letters in the line. But the letters of the line above and below, appear in part, just their ends, and serve to take away the attention from those directly under the glass. Just turn the *diaphragm* into its place, between the lowest and middle glasses. This cuts off the view of the parts of the other letters, and they no longer interfere, while the three letters directly in view, appear much clearer. This then is the use of the *diaphragm*—to make the field smaller, and to cut off those objects which can not be distinctly examined.

In looking at the printed paper as an *object*, we keep the microscope standing on its base, the light falls upon the paper, and passes from that through the glasses to the eye.—We examine it as

An Opaque Object.—And this is the way in which the microscope will be largely used, as in the examination of Seeds, in the study of Flowers and Insects, and for many other purposes. We selected the print as an object to practise with, because it is something that every one can get without trouble, and if not so interesting as some natural objects, every one understands what it is, and with it can learn the handling, or

Manipulation of the Microscope. One of the first requisites in the use of this, as of any other microscope, is *patience*. Though quite as important, perhaps, is a real desire to learn whatever the microscope has to tell about an object.

After learning how to handle the microscope with opaque objects, those of another kind may be tried. Many things that one wishes to examine are of such a nature that they allow more or less light to pass through them. These are classed as

Transparent Objects, and are seen by *transmitted light*, or light which passes through thin substances, through the lenses of the microscope to the eye. It is well to examine most objects first as opaque, and then, if of a kind to allow of it, by transmitted light. Objects of this kind need a quite different handling from the others. Just at this season there are not many such objects that every one can get. Perhaps the wing of a common house-fly is as readily obtained as anything of the kind. In almost every house, a dead or dormant fly may be found in some corner, and its wing will make a pretty object. To examine this, the two glass slides are needed, without the waterproof cell between them. Clean the slides, neatly pull off the wing of the fly, lay it upon one of the glass sides, place the other gently upon it, and slip the two together under the metal clips, or springs upon the base of the microscope, and it will be held securely in place. To see this, the microscope is to be held up towards the light, which will pass through the glass stage in the base, through the fly's wing and the slides which hold it, and through the lenses of the microscope to the eye. The different glasses may be tried singly and in combination as directed for the printed paper. The same changes in the glasses, whether nearer or further from the object to arrange the *focus*; the same difference in the size of the *field* and the same (or even greater necessity, for), use of the *Diaphragm* as before, will be noticed—and we may add, the same *patience* and careful handling will also be needed. In using the three lenses together, there is a

Mechanical Difficulty.—The upright or rod upon which the glasses slide is in the way of the observer. This could not be overcome without at least doubling the cost of the instrument, and as one of the striking features of the microscope is its heretofore unheard of low cost, it was judged best to keep the price low, and submit to this slight inconvenience, which, after a short use, one soon learns to allow for, and does not notice—still, we think it proper to point it out, that it may be in mind when first using the instrument. All this about

The Mere Handling of the instrument seems necessary for those utterly inexperienced—and the examples selected are merely for the purpose of making one acquainted with it. The sheet that accompanies each instrument suggests various objects of interest, and it should be carefully studied through. With a microscope at hand, one soon becomes accustomed to subject a large range of articles to its scrutiny, and it will be found in frequent demand. The glasses of a microscope are often spoken of as

Powers.—A lens with a long focus and broad field, we have shown magnifies less than one with a short focus and small field, and the combination of three, with the shortest focus and most limited field magnifies more than either lens alone. The three lenses together are then the highest power of this Microscope, and the upper lens by itself is the lowest power. It is always well to examine an object with a low power first. This allows more of it to be seen, and one then knows what part of it to try with a higher or the highest power. Those familiar with microscopes, will look upon these detailed and simple instructions as superfluous. They are to such persons, who cannot understand how strange such a simple microscope is to the hundreds who may have never seen—much less tried to handle and use it. To illustrate how little such matters are understood by those who are entirely inexperienced, one friend wrote that he had looked through the instrument in every possible way, and "he could see nothing." This gentleman evidently supposed that the objects to be looked at would be with the microscope, and that, as with a kaleidoscope, the thing was all there and he had only to look in and see a sight. We send out the microscope, in part as an *educational agent*—useful for what it will teach about natural and other objects, but it appears that in some cases its educational influence will begin by making persons acquainted with itself, and the method of using it.—We will hereafter give simple instructions for preparing objects.

Building Homes.

Forty-Five Millions of People in our country want some kind of a house to shelter them. At least ten millions of these give considerable thought and attention to the style, comfort, and convenience of the dwelling, in which they eat and sleep, rear the family, and in which is passed all of the time of mothers and daughters, and half the time, more or less, of fathers and sons. Some millions of people spend at least half their lives in toilsome effort to secure their own homes. Very few have the practical architectural skill needful to plan and construct, or have constructed, the best, the most convenient, the most comfortable, and the most eye and taste pleasing dwelling that can be erected with the sum they can devote to this purpose. This fact has led us to endeavor to give in every number of this journal some plan and some suggestions that may help in improving the homes of our readers, and especially aid those who have houses to build. Recognizing in Mr. Reed an architect, who possesses the rare talent of "common sense," we have given this department mainly to his care, and have sent to him most of the contributions from our readers in this line. For three years past he has supplied to nearly every number of this Journal, some house-plan of his own devising, or one made up from the suggestions of contributors. These plans cover a wide range, from the lowliest \$300 or \$400 unpretentious residence, up to the costly, tasteful mansion. We do not commend all these plans, by any means, yet scarcely one fails to afford some useful new hint or suggestion. Those who have read them from time to time, must have noticed the many good ideas, new and old, which they have presented. The details in construction given, and the carefully prepared estimates of amount, kind, and cost of materials and labor, are of great practical value. Any one having a dwelling to construct, modify, or improve, would doubtless save ten or a hundred fold their cost, if, before deciding upon a plan, he should procure the past three volumes of this Journal, and read through all that Mr. Reed has written, and also what he will hereafter contribute. We hope that within a year to come, Mr. Reed will be able to combine and concentrate into a popular volume of convenient size and price, what has already appeared in these pages. In the meantime, those who want earlier information can obtain the past three Volumes, bound or unbound, if they have them not already. (See Publishers' notice, page 6.) We solicit continued correspondence, plans, notes, queries, etc., to be sent to Mr. Reed, as helps to make his contributions still more valuable, and as much as possible adapt them to meet the wants of the greatest number.

Science Applied to Farming.—XXXVII

Progress of Agricultural Science.—Cheap Fertilizers.

The number (37) of this article reminds me that I have been writing now three years for the *American Agriculturist* on topics connected with Agricultural Chemistry. In this time I have grown to feel, in a sense, acquainted and in sympathy with my readers. The letters they write are from almost every State and Territory in the Union, and some from foreign lands, the talks with those I meet, the keen interest so many express in the science whose simpler details I have tried to tell them about, the enthusiasm with which not a few have reported their success in putting into practice suggestions I have made, and, withal, the words of thanks and cheer that come as well from men whose mien tells of hard and homely toil as from those whose language savors of learning and air of wealth; these all assure me that to begin this the fourth year of my letters to them, no topic will please them more than the wonderful progress of science applied to farming.

Although,
"Science comes but slowly, slowly, creeping on from point to point,"
and though farmers are proverbially conservative,

yet agriculture is gradually coming into line with the other arts and industries in the march of modern progress, and making use of its share of the benefits of science. A proof of this, cheering as it is conclusive, is found in the wonderful growth of the Agricultural Experiment Stations. It is only a little over a quarter of a century ago that a few progressive Saxon farmers, seeing what chemistry was doing for other interests, firm in the belief that it would do no less for theirs, their faith confirmed by the examples of Liebig in Germany, Boussingault in France, Lawes and Gilbert in England, and some of their own number at home, but, at the same time, feeling the need of more accurate experimenting than they, as individuals, had the means or the skill to carry on, joined together, and founded, in 1852, in the little village of Mœckern, in Saxony, the first *Farmers' Station for Agricultural Experimenting*. An agricultural society furnished a farm; a private individual and another society contributed the necessary funds, the farm house was turned into a chemical laboratory, the farm supplied what else was needed. A young chemist of promise, the now famous Dr. Wolff, was called to conduct the work, and the Station was an accomplished fact.

The seed thus sown has borne marvellous fruit. The Mœckern Station proved so strikingly useful, that the government came to its aid and added to its revenue. The example proved contagious. Other Stations were started in Saxony, and then in other German States. Governments, agricultural societies, schools, and private individuals, united in founding them and contributing to their support. Soon the idea crossed the boundaries of Germany. The good work begun in France, throve in spite of the regime of Louis Napoleon, and under the Republic promises a successful future. In Austria, Holland, and Russia, like enterprises were undertaken, and are rapidly increasing. Italy, united under the liberal leadership of Victor Emanuel, found this one of the most efficient means of furthering her most important industry, and had, in 1870, one; in 1872, six, and has now sixteen Experiment Stations. Magnificent work in this direction has long been going on in England. Belgium, Switzerland, and Denmark, have joined vigorously in the movement, and, last of all, Spain has fallen into line with a Station started in 1876. There are, to-day, no less than 119 regularly organized Agricultural Experiment Stations in the different countries of Europe. Portugal, Greece, and Turkey, being the only ones without them.

Of these 119 Stations, over one-half have been established in the last six years, and 40 during the last three years. Prussia has 29, all Germany 66, and the other European States 53. Besides these, there are not far from 50 laboratories connected with universities, agricultural schools, or large estates, which, though not technically Experiment Stations, are doing the same kind of work.

It is a suggestive fact that among the earliest means adopted by the Germans after their war with France, to conciliate their newly acquired provinces of Alsace and Lorraine, by improving their condition, were, in accordance with the policy that brought them their great victory, the establishment at Strasbourg, of a University, and at Ruffach, of an Agricultural Experiment Station. That a large part of the pecuniary support of these institutions comes from farmers, is proof of their appreciation by practical men. The estimate in which they are held in the scientific world is indicated by the fact that all the larger German universities, and several of those of other European countries, have laboratories and other appliances devoted to agricultural research.

Experiment Stations in the United States are still in their infancy, but promise a brilliant future. Only two have as yet been successfully inaugurated, one in Connecticut, and one in North Carolina. Several of our leading Universities, Agricultural Schools, and Bureaus and Boards of Agriculture, have been doing excellent work in this direction, notably the Bussey Institution of Harvard University, the

Georgia Bureau of Agriculture, and various others. As I am informed by persons who have applied in person or by letter for information concerning the organization of the Connecticut Station, efforts, led by prominent agriculturists, are already in progress to secure the establishment of similar institutions in no less than eight other States, and steps are being taken in the same direction in several more.

What is the Cheapest Commercial Fertilizer?

is an inquiry that I frequently receive. The most economical fertilizer for a given case is that which supplies, in the best forms, and at the lowest cost, the plant food which the crop needs and the soil fails to furnish. The requirements of different soils and crops are of course varied. In itself considered, that commercial fertilizer is the cheapest which furnishes the valuable ingredients at the lowest rates. Our State Agricultural Society had this subject canvassed with unusual thoroughness by offering at their fair a year ago last fall, prizes for those "fertilizers which, as actually sold in the State, are found, on comparison of the selling price with the actual composition as shown by the averages of the analyses made at the State Agricultural Experiment Station, to furnish the valuable ingredients in the best forms and at the lowest prices per pound."

The first prize, a Gold Medal, offered "for the Fertilizer which furnishes the largest quantity, at the lowest price per pound, of Nitrogen, Phosphoric Acid and Potash," was given to *No. 1 Peruvian Guano, Rectified*, manufactured by Hobson, Hurtado & Co., and sold by them and by C. V. Mapes. In the Judges' report, which was based, not

"upon the specimens exhibited by manufacturers or sellers at the State Fair, but upon the character of the Fertilizers actually sold to the Farmers of Connecticut, as shown by analyses of a large number of samples collected from various places where they were sold," they "take occasion to say that we deem the plan adopted in the preparation and sale of Peruvian guanos, particularly the 'Rectified' and 'Guaranteed' brands, worthy of special commendation, in that the prices at which they are sold are based upon the analyses as guaranteed upon each package, each pound of the valuable ingredients being rated at a certain price, instead of the usual way of selling by the gross weight irrespective of the relative proportions of the valuable and the comparatively worthless ingredients. It is both fortunate and suggestive that the plan, which is the most rational and just one for the sale of commercial fertilizers, should have been adopted for an article of such leading importance in our agriculture."

The prize for ammoniated superphosphates was awarded to Russel Coe; that for superphosphates without nitrogen, "plain superphosphates," to H. J. Baker & Bro., and that for fish manures to the Quinipiac Fertilizer Co. The Stockbridge and Matfield Fertilizers received honorable mention as being what they were claimed to be. Since this report was made, a good many more fertilizers have been analyzed at our laboratory. Indeed, during a little over two years past not far from 300 samples of commercial fertilizers, comprising nearly all of the more important kinds sold in this part of the country, have come to my hands for analysis. Among these were 15 samples of Peruvian guano. The composition of these averaged, on the whole, better than was claimed. Taking into account both quality and price, no other fertilizers have been seen at our laboratory, which, as a class, taking into account both quality and price, furnish the valuable ingredients of plant food so cheaply as Peruvian guano.

W. O. ATWATER,
Wesleyan University, Middletown, Conn.

Ogden Farm Papers.—No. 95.

BY GEORGE E. WARING, JR.

Whatever may be the future experience of the Ogden Farm enterprise, of one thing I am quite sure: that I shall have no duty in connection with it so distasteful as the writing of this paper. Henceforth—having learned wisdom by experience—I shall make no more promises. In the enthusiastic anticipation of a brilliant success, I promised, eight years ago, to tell the whole story of my farming, with full and entire frankness. I have left myself no loophole for escape, and must be as good as my

word. Moral: Be careful what you promise, that you may escape the need for doing what you would gladly avoid.

I have thrown my only sheet anchors to windward, in giving an account of my successes in the making and selling of butter, and in the breeding and selling of Jersey cattle. However good these are, they will not keep me from drifting on to the lee shore. Wind and tide set too strong that way, and I can only own up to a most ignominious failure in attempting to make a profitable operation of reclaiming a worn-out farm, by the application of the best modern improvements.

There is one office to be performed by this story, which will be of value to a very large class who are known as "gentleman farmers," for they are subject to the same temptation which undid me—the temptation that comes of having too much money. Mr. Tyler, my backer, entered into the scheme with a really growing enthusiasm, and strewed my road with roses. Year after year, his only anxiety seemed to be that not enough would be done. No improvement could be suggested—by my tongue or by his own fancy—which did not produce, without stint, what ever money the improvement might need. His boundless liberality, from the very start, has been equalled only by his entire kindness, and manliness in accepting the final and direful result. My one great consolation, in reviewing the whole matter, is the feeling that the cordial personal relations which have always existed between us, have suffered nothing from the strain which our failure has put upon them.

I have given ten years' services for ten years' most valuable experience; he has given a great deal of money for temporary hopes and satisfaction, followed by an assurance of failure and disappointment. The account is not even—nor can I make it so, however much I may yet accomplish for his son and successor.

To come down to details, I give the following figures:

Our total outlay has been.....	\$125,017 18
Divided as follows:	
Farm and Buildings.....	30,202 29
Labor.....	16,892 72
Implements.....	5,096 08
House Expenses.....	9,102 06
General Expenses.....	8,978 38
Feed.....	28,103 46
Manure.....	2,144 32
Seeds.....	513 29
Books.....	318 58
Live Stock.....	20,551 05
Produce Sold.....	3,114 85
Against this we have the following credits, amounting in all to.....	106,952 62
Divided as follows:	
Farm and Buildings, (estimated value),	25,000 00
Live Stock Sales.....	32,531 80
Live Stock on hand, (estimated value),	13,299 00
Produce Sold.....	23,321 82
Implements on hand, (estimated value),	1,500 00
Produce on hand.....	1,200 00
Good-will.....	10,000 00

This is the best estimate that I can possibly squeeze out, and it shows a deficiency of \$18,024.56, to say nothing of a very large amount of interest, which, on the whole, it would not be fair to include; for the naked fact is that, so far as money has been lost, it was lost when it was spent, and there would be no more reason in calculating interest for the period of our enterprise, than for calculating it henceforth forever. The case is bad enough as it stands, and it is not worth while to aggravate it by considering money which would have been paid from profits if profits had been realized.

Concerning the estimated assets given above, there is only this to be said:—The farm and buildings have cost more than they are appraised at, and there has never been \$500 spent on any ornamental improvement. We did spend some \$2,000 in an extension of the barn, and in a poultry-house, which have not much practical value. The land was considered cheap at what it cost, \$7,738. Its draining could now be done for about \$5,000. The buildings would now cost (the necessary ones, including the very fine barn) at least \$9,000, and the removing of interior fences, road-making, grading, etc., would be cheap at \$1,500. This leaves \$1,772 to represent

the increased fertility of the land due to the cultivation and seeding down that it has received, and to the enormous amount of manure added to it by the consumption upon it of all the crops it has grown for 10 years, and of our \$25,000 worth of purchased feed. The value of the live stock—as was stated in last month's paper—is made at fair selling-rates, and it could be closed out at the price within a year, paying its way in the meantime. The item of implements I might fairly place much higher. Produce on hand, (Sept 6), I lumped at the equivalent of 60 tons of hay at \$20 per ton—it amounted to more than that.

The remaining item, "good-will," I have put at \$10,000. I consider it worth that, under the most unfavorable circumstances. If I owned the farm to-day, and intended to follow the same line of business, I would not sell our reputation for a larger sum, for it would take years of hard work and volumes of successful writing, to replace it. A new comer, unknown as a dairyman, and as a breeder of Jerseys, could well afford to pay more than \$10,000 to be placed in the present position of "Ogden Farm," in the estimation of the public. On the whole, I consider my column of credits—footed up \$106,952.62—to be fairly constructed.

The practical question in connection with the whole matter is, whether it would now be possible to take up the enterprise—farm, stock, and good-will—and carry it on in such a way as to make a profit on this large valuation. As an ordinary farming operation, it certainly would not be possible. It would call for a net revenue, over all charges of every kind, of about \$6,500 per annum. But it need not be regarded as an ordinary farming operation. The aim should be to extend the business of buying and selling, and breeding Jerseys to the utmost capacity, not only of our 73 acres, but of such land as we could hire in the neighborhood, until we were in a position to supply any number of animals that might be called for by the constantly increasing demand. The utmost practicable extension should also be given to the production of butter, and its sale at a high price. Managed in this way, I think that a business might be done which would warrant the use of even a much larger capital; and it is to some such system as this that we must now look for success. My experience as Secretary of the American Jersey Cattle Club, enables me to form an estimate of the extent of the business. The "transfers of ownership" average about 2,000 animals per annum; and probably three-quarters of this number are original sales, the remainder being only records of old transactions. Most of these sales are probably made at prices at which it would not pay us to compete for them, but the demand is already very large for really first-class animals at profitable prices, and it is constantly increasing. There is a good field now, and it is steadily extending, for any breeder of first-rate reputation.

However, let us not speculate as to what may be done in the future. It will be better to wait, and tell in the future what has been done in the past—only let it be borne in mind that my *promising* days are over. If I make a success, I shall probably be willing to brag about it; if I make another failure, my pen will be otherwise engaged.

I have hinted above that "gentleman farmers" may find food for reflection in this account. I know the class pretty well. They have made their mark in all parts of New England and the Atlantic slope of the Middle States. Expensive, and often fanciful farm buildings, walls built for the sake of getting rid of stone, artificial land founded on piles of artificial rock-work, expensively drained swamps, which refuse to stay drained, and all manner of cash-sepulture, constitute their sign-manual, and one need only drive through any hundred miles of the region described, to become amazed at the vast sums of money—earned in other ways—which have been, and still are being, irretrievably lost in the attempt to gain credit and satisfaction in "Improved Agriculture."

We hear of this man, and of that, who is carrying on his fine farm "on strict business principles," and who is making a great success. Basing my belief on my experience, I fancy that their successes,

as a whole, will not often bear the searching scrutiny of the slate and pencil. Success in *items* is frequent. The bare statement that we started only ten years ago, with a wretchedly poor little farm, with no reputation, and with no experience in breeding or in dairying, and have sold our \$20,000 worth of butter, and have made a profit of over \$25,000 on our live stock, would mark us as most successful farmers. If we had kept no account of our outgoes, we should fancy ourselves champion Improved Agriculturists, whose business principles have been of the strictest and most successful sort. But we did keep accounts of everything, and they are here spread out before the triumphant gaze of the average reader. The rules of the English telegraph service will not allow a man, in a despatch of his own writing, even to call himself a "duffer." Let me take advantage of the amenities of the agricultural press, and refrain from naming my own obvious qualities. The impression under which I am now laboring is, that I cannot, in any system of strict terminology, be designated as an entire success.

At the same time, I have enough fight left in me yet to wish that I might measure trial-balances with some who may fancy themselves my betters. Look at my labor account; nearly \$1,700 a year—added to a charge for board of over \$900 a year—yet everything like draining, wall moving, road making, etc., is covered by the item "Farm and Buildings." I have never hired men because times were hard, and they needed help; I have never paid high wages; and I have always had long hours. I have done no fancy work of any sort—have even been called untidy, and have acknowledged it. In spite of all this, the whole of the large sum made on live stock, has gone this road. Look again at the amount spent for "feed," (including hired pasture, but none of the products of our own soil). It has swamped our total butter sales, and more than enough more to pay the original cost of the farm. Then, too, that horrible sum on "General Expenses," little odds and ends like postage, and horse-shoeing, and harness mending, and all manner of extras, it has run up to a sum nearly equal to the cost of boarding hands whose wages were more than \$16,000. The necessary conclusion seems to me to be that the steady and inevitable outflow of money required in carrying on a farm on anything approaching a "grand" scale, is more than the business can stand, even with the advantage of exceptionally high prices. Such farming as we have undertaken can not pay, unless it is done on a much larger or on a much smaller scale—small enough for the farmer and his family to do most of the work, or large enough for the commercial element to support the industrial element.

That Ogden Farm offers at least equally valuable hints to the farmer who carries on his own place very largely with his own labor, and who has only sufficient capital to carry it on in a small and careful way, I think no one who has followed its operations, as detailed in these papers for eight years past, will question. We seem to have made it very clear that to manage a small farm as one would manage a large factory, is not profitable. But, incidentally, there appears ample evidence that the small farmer may profit very much by an improvement of his processes, and by getting a reputation for producing only goods of the best quality.

We have had exceptional advantages, and have been able to get higher prices than a small, single-handed farmer could get under ordinary conditions—but, thus far, our advantages have cost more than they have come to. Every butter-making farmer in the country, even if he keeps but a half dozen cows, may, if he will keep good Jerseys, or breed to a good Jersey bull, and raise his best heifer calves, soon put himself in a position to get an increased price on his butter, and this increase will be all profit. If he improves the quality of his cows by crossing with Jersey blood, he will be able to get an extra price for his surplus, if sold only to his own neighbors. If he breeds a good quality of Registered Stock, he can depend on a good sale for his increase, at very remunerative prices. I instance these two items because they are the ones in which I have had experience. The same result would follow equal care in any other kind of stock

raising—or in seed raising. To do what is done in the best way that can be afforded, and to send to market the very best class of goods that can be produced, seems to me the means by which good and prudent farming is to be made profitable.

I have a theory that if I had begun with a good farm (costing much more at the start) I should

its being obscured by shrubbery and trees, which are indispensable accompaniments of a properly developed homestead.... **Cellar**, (fig. 2.)—Height 6½ feet. It has three windows, an outside entrance, and stairway leading to the kitchen above.... **First Story**, (fig. 3.)—Height of ceiling 10 feet. The accommodations, consisting of five rooms, a pantry, and two closets, are adapted to a good sized family. The Parlor and Kitchen are the principal rooms, and occupy the middle portion, their sides being protected by other rooms, and, having the fire-place between them, they are easily warmed. The device for heating described last month, would serve admirably in this house. Two Bed-rooms adjoin the parlor. Many might choose to have double doors entering the bed-rooms, to allow all three to be used together occasionally. This would not preclude the use of the smaller ones as bed-rooms, or, if preferred, as a sewing-room and a library. The Kitchen is the largest room, with doors leading to the pantry, bed-

gradients are simply fresh burned finishing lime, using the lumps only, and unrendered beef suet. It is necessary that these parts be kept in lively motion while dissolving, or they will be entirely

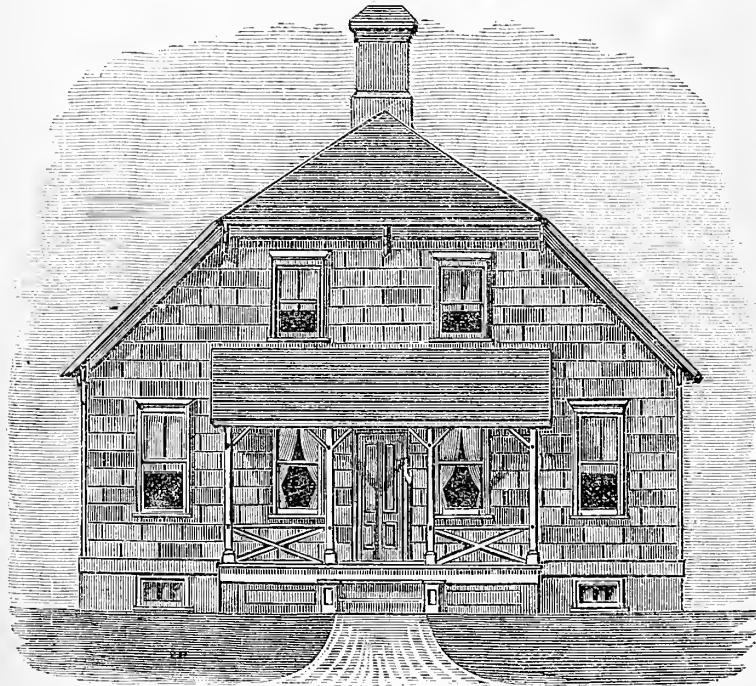


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

have shown a better result—but there is no use now in thinking of “what might have been.” The ease with which I could get money, and the confidence I reposed in “strict business principles,” would probably have swamped me in the Garden of Eden.

Country House, Costing \$750 to \$1,050.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans represent a commodious dwelling house, constructed with especial regard for economy and utility, and they will be appreciated by those desiring to provide a comfortable, permanent shelter for home by the use of limited means.... **Elevation**, (fig. 1.)—In preparing plans for “low-priced” houses, the simplest outlines are indicated. Having to combine usefulness and small outlay, there can be no latitude for architectural display, beyond mere matters of accommodation and completeness. The exterior of this example fairly expresses its domestic purpose. The breadth

room, parlor, stair-way, and the rear entrance. The outside or entrance doors may be protected in severe seasons by storm-doors hung to open outward, with loose joint butts to allow of their ready removal. The rear veranda is similar to the front one shown on the elevation.... **Second Story**, (fig. 4.)—The front portion only is finished, with ceilings 8 feet high, and is divided into two chambers and four closets. The rear portion is left unfinished to be used as an open garret. The space above the ceiling of the finished portion may be floored over with boards, to serve for storage of quilting-frame, trunks, etc.... **Construction**.

—The excavations for the cellar are 4 feet deep. The foundation walls are of broken stone, laid in mortar, and show 2 feet above the earth grade. A strong girder resting on large posts, or columns of stone or brick, supports the center of the building. In setting the girder, it should be elevated from ¼ to ½ of an inch in the center, rising gradually from each end, to allow for settling, which invariably occurs from shrinkage of the interior frame work. The timber for the frame work is indicated in the estimates below, and is substantially framed together. All the outside studding is halved over the principal timbers, to prevent vertical shrinkage from affecting the exterior covering of the side walls. The exterior covering is of lath and plaster, as follows: all cornices and other dressings, and the roof should first be completed—and all window and door frames set and cased. The outside frame should then be thoroughly lathed outside and inside. All this is to prevent jarring or pounding on these parts during the application, or setting of the plaster. The plaster is made in the usual manner of fresh burned lime and sharp sand—with half a bushel of hair to each barrel of lime used, and allowed to lay two weeks to insure a thorough slaking and permeation of the lime. It is then applied in two coats—the first a “scratch,” the second a “browning.” The surface is floated with a “dabby,” (not trowelled.) After having stood a sufficient time to become dry, the whole is covered with a preparation called “Sterate of Lime,” using an ordinary whitewash brush. The formula for making this sterate of lime, (known only to a few who have treated it as a secret), is here published for the first time, and will be understood by those familiar with the operation, and of slaking lime. The in-

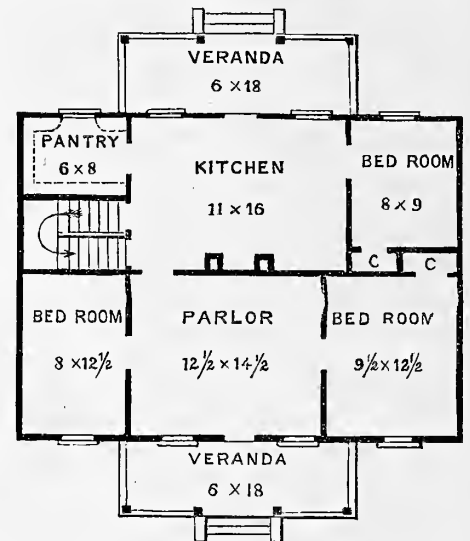


Fig. 3.—PLAN OF FIRST FLOOR.

destroyed by “burning.” The usual process is to sink a large barrel, having an open end, two feet in the ground, pounding the earth around to make it firm. An upright piece, 4 inches in diameter, and 6 feet long, is set upright in the centre of the barrel, and held in position by cleats at the bottom and top, leaving the upright free to turn. Arms are put through the upright within the barrel, and a cross-bar or lever is attached to the upper end—the whole making an apparatus similar to a “clay-mill.” One bushel of lime, 20 pounds of suet, (chopped fine), and a barrel of boiling water are provided—and while one works the “mill,” another feeds alternately lime, suet, and hot water. This quantity of material, costing about \$2, will make a full barrel of the preparation. Any desired shade may be afterwards given by adding stainers. This mixture is applied while hot—two coats being necessary to insure a thorough covering. This will also be found a valuable preparation for covering exterior brick or concrete work. It is impervious to water, and will outlast any of the paints prepared for such purpose. All other information concern-

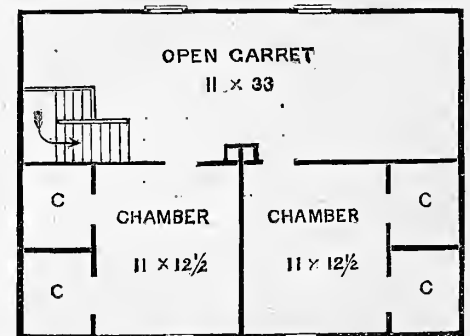


Fig. 4.—PLAN OF SECOND FLOOR.

ing the finish of this house may be inferred upon a careful study of the following estimates:

Estimate, cost of materials and labor:

95 yards excavation, at 20 cents per yard.....	\$ 19.00
1062 feet stone foundation, at 15 cents per foot.....	159.30
24 feet stone steps and coping, at 28 cents per foot.....	6.72
2000 bricks in chimneys, laid, at \$12 per M.....	24.00
517 yards plastering, inside, at 25 cents per yard.....	129.25
130 do. do. outside, at 30 cents per yard.....	39.00
1850 feet of timber, at \$15 per M.....	27.75
2 sills, 3x8 in. 34 feet long.....	2 plates, 4x6 in. 25 feet long.
2 sills, 3x8 in. 25 feet long.....	2 perlines, 3x8 in. 15 feet long.
1 girder, 4x8 in. 32 ft. long.....	2 perlines, 4x6 in. 18 feet long.
4 posts, 4x7 in. 11 feet long.....	100 beams, 1½x8 in. 13 ft. l'g.
3 ties, 3x6 in. 34 feet long.....	
300 wall strips, at 13c. each.....	39.00
4 locust posts, at 30c. each.....	1.20
190 flooring, at 20c. each.....	38.00
216 shingling lath, at 6c. each.....	12.96
39 bunches shingles, at \$1.40 per bunch.....	54.60
3 cellar windows, at \$5.99; 12 plain do. at \$7.88.....	93.60
17 doors, at \$4 ea., \$68; 2 verandas, \$50 ea., \$100.....	168.00
Stairs, \$20; cornice materials, \$18.....	38.00
Closet finish & base, \$15; Nails, \$12; Cartage, \$20.....	47.00
Painting, \$10; Carpenter's labor, \$100.....	140.00
Incidentals.....	13.22
Total cost, complete.....	\$1,050.00
Omitting Cellar and Verandas would save.....	300.00
Total, after deducting.....	\$750.00

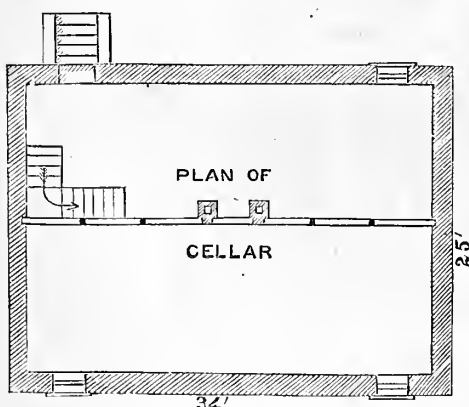


Fig. 2.—PLAN OF CELLAR.

of the front, the preponderance of horizontal lines, and the hooded roof, are each indicative of strength, and suggest its adaptation to rural situations. The satisfactory appearance of this house will greatly depend on its location. The best results would be obtained by placing it on a slight knoll, giving it additional apparent altitude. This would prevent

Head of a Shorthorn Cow.

We give herewith an engraving of a fine portrait of a head of a model Shorthorn cow. This is "Duchess Gwynne, 2d," one of the choice mem-

bers of the finely-selected and highly-bred herd of Earl Bective, of Underley Park, England. This cow is 8 years old, and has borne 6 calves. Her dam was sold in 1866 for \$315; in 1868, she was re-sold for precisely thrice this sum. In 1874, the dam was again sold for the sum of \$2,227.50. Two years later, her cow-calf was sold for \$2,650. The cow, whose head we here reproduce from the "Agricultural Gazette" (London), is a finely-formed animal, and an excellent feeder and milker. Her reputation as a breeder is such that three of her calves realized at the last Underley sale, \$6,250. The cow is, therefore, a very valuable piece of property to her owner. The head is a model, and shows the animal to be of the tempera-

ment that we look for in a good feeder and milker. There is about it the true character which belongs to her Duchess lineage, and the air of high breeding which is so attractive in the show or the sale ring. One can readily excuse a wealthy purchaser, who is attracted by these qualities, for bidding what we may truly call extravagant prices for such animals. In reality, the prices given are extravagant when considered under ordinary circumstances, but when considered as value given for scarce and desirable articles of luxury, comparable with fine and rare works of art, the extravagance no longer exists. These animals are, in reality, works of art, because they are produced by the most skillful and artistic breeders for the purpose of luxurious enjoyment, rather than for ordinary uses as producers of milk and butter, or beef. In such a case, the rules regulating ordinary intrinsic values do not hold good, and we should be careful to distinguish between the circumstances surrounding these fashionable families of Shorthorns, and those relating to ordinary serviceable animals, when we feel disposed to criticize the actions of purchasers of the former. In relation to this subject, it is, perhaps, pertinent to refer to the present depressed condition of the Short-

horn market. It would be a matter for regret were this valuable interest to be unduly depressed. To some extent, the present unsatisfactory condition is due to an unavoidable reaction from the excessive speculative activity of a few years ago. Speculation always injures whatever it may touch,

in this way, but it is certain that out of the present condition there will grow a healthy legitimate business, in which there will be money for all concerned; for the breeders of high-bred families of unusual value, and sought by wealthy purchasers; for the breeder of the plainer and more useful ani-

horns, when thus divided into two distinct branches, and kept thus separated, is one that has a certain future before it, and will undoubtedly increase in extent and importance. There is no reason why confidence should be withdrawn from it, because in the process of the necessary separation above in-

dicated, it is under a temporary cloud. The production of meat is destined, without any doubt, to be immensely extended, as the great western plains become covered with herds, and as the farms east of those become feeding places for finishing off the grass-raised cattle into mature fat beef, or into breeding farms for supplying pure - bred bulls to the graziers; and as all these together become purveyors to the needy people of Europe, as well as to our own rapidly-increasing population. The present nucleus from which the greater part of our future beef, and much of our milk, butter, and cheese, must come, exists in our pure Shorthorn herds, and to these we must look for the greater part of the means we shall use for

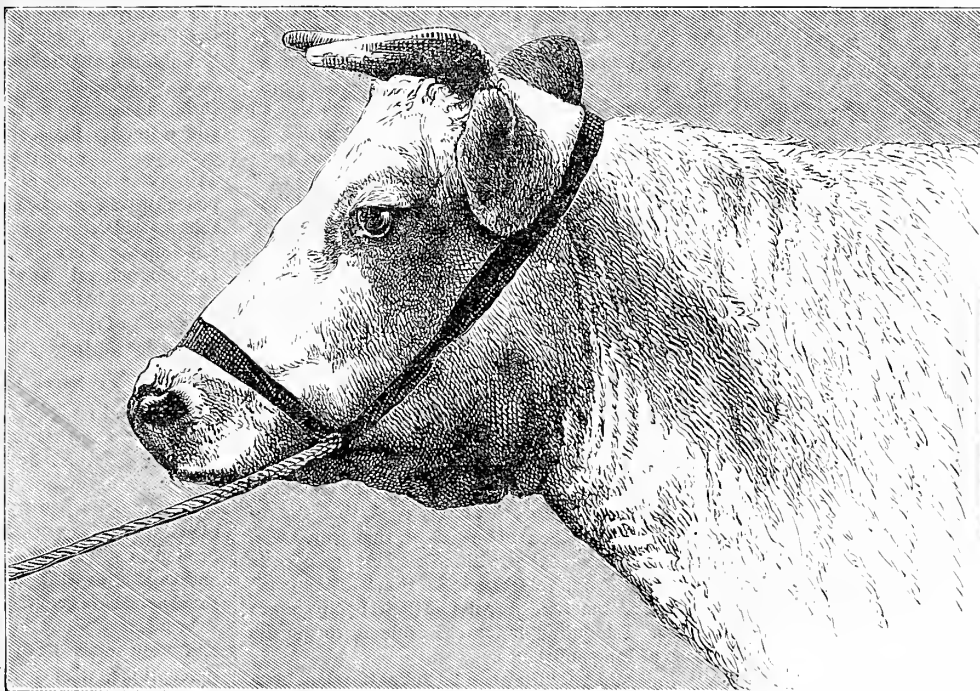
the future development of stock-growing. With such a future in prospect, the Shorthorn interest can not long remain depressed. Intending buyers could have no more favorable opportunity than the present.

A Remarkable Jersey Cow.

Authentic records of the performances of good cows are valuable. They not only show what may be aimed at by breeders, and farmers, who should

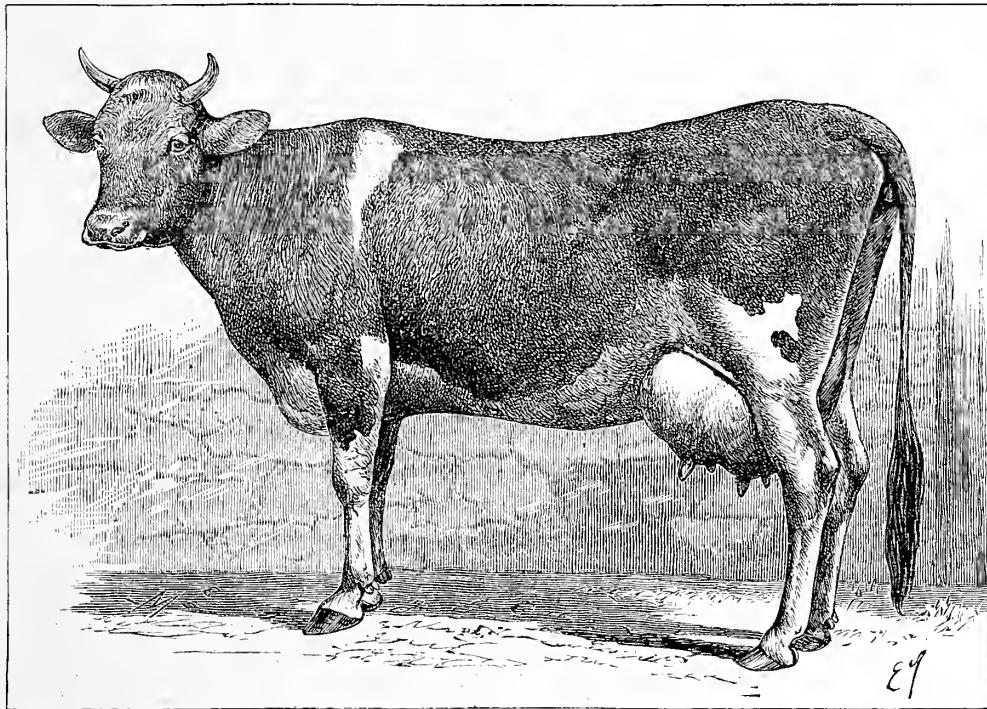
keep only the best animals, and breed from these with the greatest care, but such records show very clearly the vast difference there is between good cows and the common ones generally kept, and how much more profitable the best cows are than others. There have been recorded from time to time, in the *American Agriculturist*, the products of a number of more than usually good cows, and we have seen these records gathered carefully by agricultural writers as evidence of the value to farmers of such excellent animals. These records, therefore, have a certain value, and as from time to time we are authentically informed of the performances of extra good cows, we gladly publish them as information of both present and future interest.

We have been favored by Mr. Harvey Newton, of Southville, Mass., with a record of his Jersey cow "Abbie," from April 17th, 1876, to March, 1877, during which time she yielded 10,070 lbs. of milk, as follows: April 17th to 30th, 417 lbs.; May, 1,365 lbs.; June, 1,406 lbs.; July, 1,247 lbs.; Aug.,



HEAD OF SHORTHORN COW "DUCHESS GWYNNE, 2D."

mals, for farmers and graziers' use; and for the farmers and graziers who buy breeding animals on their merits, rather than for those of their ancestors of several generations back. A farmer or grazier can well afford to give for a yearling for breeding purposes the sum which it would bring for beef when mature, or for milk and butter when a cow; and this price would pay the breeder very handsomely. The so-called fashionable animals will always bring high, and, when judged by an ordinary standard, extravagant prices; but so long as spec-



JERSEY COW "ABBIE."

ulation does not run wild in consequence, there can be no objection to the enjoyment, by men of wealth and fine taste, of the satisfaction which comes from the possession of animals which are attractive for their beauty, and costly from their scarcity and expensive breeding. The business of breeding Short-

1,155 lbs.; Sept., 992 lbs.; Oct., 907 lbs.; Nov., 794 lbs.; Dec., 788 lbs.; Jan., 1877, 707 lbs.; Feb., 551 lbs.; March, 371 lbs. Total, 10,700 lbs. On April 15, 1877, she calved again. The butter produced within the year was 486 lbs.; besides which, milk and cream were supplied for family use. A portrait engraved from a photograph of this excellent cow is given on the preceding page.

Among the Farmers.—No. 24.

BY ONE OF THEM.

Old Novelties.

I wonder how many farmers feel as I do—a sort of repugnance to the very name *novelties*. After writing it above, to make it look less repellant I wrote *old* before it. In fact I have no thought of discussing new things, but only the fact that new things are all the time coming up, which, because their advocates claim too much for them, live the life of a nine-days'-wonder, and then die of over-exaltation. It generally happens that somebody has faith in them, and so they are kept alive in the warmth of some enthusiast's fancy or kitchen garden, waiting a subsequent resurrection and the recognition of their virtues. Possibly, like Cleopatra's Needle, they may be thought more of at the antipodes than at home, and, in fact, that is the way with many of our most valued crops. I met with Mr. James Salter, the other day, he had

A Chinese Yam

as large and long as a man's arm, nearly, which he had raised in the yard of his Brooklyn dwelling. He raises these yams regularly, and has done so ever since the plant was brought out with such a flourish of trumpets by Prince, of Flushing, fully 20 years ago. They furnish an abundant quantity of excellent food, of which the children are very fond—preferring it decidedly to any preparation of common potatoes. They are cooked by simply boiling—and of this they require very little before they become mealy and delicate, so that it is not alone the children who are fond of them. Mr. Salter plants some every year, and they occupy the ground two years, at least, then, by digging a trench by the side of the row, the tubers are taken out, and are long and large in proportion as they have been long in the ground. Although Mr. S. makes a planting by sowing the small "bulblets," or little tubers, which form in the axils of the leaves, in rows like beans, and thinning out the row subsequently, by removing the plants if necessary, yet he saves a year's time at least, by cutting off the upper end of the long tubers when he digs them, and setting that out at once. The form of the tubers, as is well known, is peculiar. They are club-shaped, the big end being deep in the ground, and the long, slender handle end, so to speak, being at the surface, and this is what is cut off and replanted.

The vine of the Chinese Yam is highly ornamental, it being somewhat like the Madeira vine, which is so popular, but prettier. Mr. S. has a farm in Connecticut, where more or less of it is regularly raised. Most of the best seed stores furnish the little tubers, and any one may readily add a new vegetable, the raising of which will give very little trouble, to the list of those now cultivated, and of which we may become exceedingly fond when it is generally cultivated. [By "raising," our correspondent evidently does not mean the lifting of the roots, or "tubers," as he calls them. The greatest obstacle to the culture of the plant is the difficulty in digging it, and on this account it can never become popular or profitable.—Ed.]

Lung Murrain among Long Island and New Jersey Cows.

It has been a well known fact that pleuro-pneumonia has been lurking in the "swill milk" stables of Long Island and New Jersey for years, and that now and then it escapes from its legitimate haunts and decimates the herds in the surrounding country, or in circumscribed districts. One of my friends among the farmers of the Island, called to-

day to ask what he could do to protect his herd of cows from the "distemper."

"Distemper," said I, "'cow distemper,' what is that?"

"The milkmen call it so," said he. "It shows itself by a cough, and by the cow standing with her back bowed up and her head down, and looking dull and stupid."

"That is something terribly like the lung murrain, or cattle plague, the pleuro-pneumonia, which was so fatal in Massachusetts in 1860, and was so vigorously stamped out by the State authorities, by killing and paying for every animal that had been exposed. How near is the disease to you now?"

"I don't know how near it is, but my neighbors have been inoculating their cows for it, by taking little slices of the lung substance of a cow which had the disease, and inserting them in slits cut in the tails of their cows, binding the inoculated ends of the tails up with a rag for a few days. As soon as it takes, the rags are taken off, and it makes a bad sore, but the cows do not have the distemper. Now I want to know if it will not do just as well to take some of the matter from these wounds, and introduce that, as to get a piece of diseased lung."

I could not answer that question from previous knowledge, but imagine that from the fact that pieces of fresh lung are always used, that the results are best when obtained in this way. The stump-tail cows of the swill milk stables gain their distinction from this cause, as the "distemper" travels up, sometimes involving their rumps more or less. I inquired if it were difficult to get the pieces of lung substance.

"No," said he, "they can be got at the slaughter-houses; the butchers know the animals that have the disease."

"What?" said I, "is it possible that this sick beef is killed and marketed?"

"Certainly. When an animal gets the distemper her owner turns her off before she gets it very bad."

In view of these facts do we not need

A Veterinary Inspector of Live and Dead Meat?

No doubt quantities of unhealthy and even badly diseased meat is sold annually in our large cities, and particularly in the group of cities around and including New York.

It is a fact for which we cannot be too thankful, that several of the diseases which are such scourges to the cattle of Europe and Great Britain, are much less virulent here. There is some quality in our dry atmosphere in summer, or in the zero-cold of our winters, which seriously interferes with the vitality of this very disease (Lung murrain) as also of the "Foot-and-Mouth" disease. This should not, however, lead us to be less careful, for some day a disease might be imported which would sweep off our herds as the lung murrain did those of south Africa, where it was introduced in 1855, and in two years had traveled 1,300 miles, literally sweeping the immense wealth of neat cattle off the face of the earth. We need a

Governmental Inspection of Incoming Cattle.

The people are deceived by certain requirements of the Government. Orders are issued to our Consuls abroad, as to certificates of health, etc., but so far as I know, and I certainly am in a way to know, a sick animal can be just as easily landed in New York as a well one, and I think easier. There is no barrier to the introduction of disease from foreign ports into the ports of the United States.

We had a wholesome scare two or three years ago about the Rinderpest, but like soldiers under fire, though the danger is as great now as it was then, we have long since given up the idea of protecting ourselves against it. What the results of an outbreak of the disease in this country would be, no one can tell. Like a fire in the woods, which now laps up the dry leaves, and stays only in some rotten stump or hollow tree, and again sweeps away miles of heavy timber, leaving nothing but charred stems and drifts of ashes, the coming disease may go by doing us little damage, or it may well nigh annihilate our herds. Are we ready for the experiment?

Hitherto the American system has left the pro-

tection of the people against the introduction of disease by water, to the several States which establish more or less efficient quarantine regulations at their various ports. The natural dread of "the pestilence which walketh in darkness, and the destruction which wasteth at noon-day," is such that people readily submit to any reasonable quarantine regulations. In fact, they submit to anything without questioning its reasonableness. It would not be so with regulations affecting the trade in cattle. Purely mercenary motives would be roused in men, and often no little expense incurred. Owners of cattle would evade the laws if they could, and the authorities in one State or another, to avoid expense, would wink at infractions, trusting to luck that no wide-spread evil would be the result. It is not a matter for the different States, but clearly one for the general Government to control with a strong, firm hand, administering the same laws on the coast of Maine as on that of Florida—on the Canada as on the Mexican frontier.

Money Made by Poultry Keeping.

It seems to me that the interest in poultry is increasing, and that more poultry keepers, instead of being absorbed by the insane idea that every one is going to get rich by selling fancy eggs at \$3 a dozen, or poultry ready to lay, at \$3 to \$5 a piece, are giving attention to raising eggs in winter, broilers in spring and summer, fat pullets in autumn, and capons in winter. In these products there is steady and sure profit. Of course a few will succeed as breeders of fancy fowls, but the number is limited, and they must have good judgment and keen perceptions, with persistence and perseverance.

Capon Raising

is a profitable branch of poultry culture which is not likely to be over done. The art of caponizing is easily learned. Mr. Rushmore, President of the Eastern New York Poultry Society, learned to practise it a few years ago, and last year raised a large number of these delicious fowls. He informed me that he lost not more than two per cent, and that there is no need of losing any if the birds are empty of food, and the operator has sufficient light to do his work well. Good fat capons will bring fifty per cent. more per pound than other fowls will sell for, and very large capons much more than that. The conditions for success are the possession of hens of a large breed, and the use of judicious crosses to produce quick growth, with hardiness of constitution and aptitude to lay on flesh. There is no doubt, I suppose, in regard to the

Advantage of Cross Breeding.

What breeds to cross, is a problem which has not yet been solved. I was much interested in learning of a series of experiments which Mr. Rushmore is planning to carry out next spring. They were suggested in a measure by an experiment tried this year with marked results. Asiatic fowls were bred pure, and also mated with Plymouth Rocks, which itself is a recognized cross-breed, but an established one. The result is that the cross-bred pullets and cockerels are several pounds heavier than the Asiatic pure bred ones, which have had equally good care, feed and other conditions of growth. Those cross-bred chickens instead of making a great growth of stilts at first, and subsequently laying a modicum of flesh and fat upon them, are always ready for the table, and profitable to send to market, after they are as large as quails. The first cross makes, as a rule, the greatest improvement upon the parent breeds, and a number of practical questions come up, in regard to the subject of poultry raising, with the view simply to produce the largest amount of meat which will bring the highest price in the market. For instance, as in the crossing of Brahmas and Plymouth Rocks, or any Asiatics with games, should the hens be of the larger breed, or the reverse? Which breeds crossed will develop the greatest early maturity? The greatest weight at the most profitable ages? The greatest weight and plumpness at the best market periods? Which make the best capons? There have been a good many half-made efforts to solve these and kindred problems, and I am glad to know that Mr. Rush-

more proposes to conduct some thoroughly well considered experiments on a sufficiently large scale to give data of substantial value.

Talks on Farm Crops.—No. 11.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

I have always had a prejudice against corn-fodder. I thought it was too bulky a crop in proportion to its nutriment. If fed green, we had to cut and draw 20 tons of material to get 3 tons of dry fodder of far less value than clover hay. I thought so long as we continued to plow under clover for manure, there was little sense or economy in raising a poorer article for food. But we find it is not always an easy matter to raise clover. In fact, for half a dozen years back, I have not had a really good crop of clover on the farm, and if it had not been for corn-fodder, I should not have been able to carry the desired amount of stock.

I raised corn-fodder because I could get the necessary food in no other way. Corn-fodder is a sure crop, and while by no means equal to clover hay, it is a good deal better than nothing. In fact, the longer I raise it, the better I like the crop.

I have raised it, not for soiling, but for fodder in winter. For this purpose, it is certainly a most desirable crop on my farm.

I have thought it might be better to plant a larger area of corn, using the grain for the pigs, and the stalks for cattle and sheep. But the corn-crop, in this section, requires too much work during the short and busy days of autumn to admit of a greatly extended area. But this objection does not hold in regard to corn grown exclusively for fodder. There is no husking. All we have to do is to cut the crop with a reaping machine, and bind it into bundles, and put it in large stooks for the winter. As soon as we get a good reaper and binder that will cut and bind the corn into sheaves, it is clear to my mind that there is no crop that we can grow in this climate, with the same amount of expense, that will afford so much food per acre.

"That may be all so," said the Doctor, "but the trouble is that the corn-fodder is not rich enough. There is more food per acre, it may be, than in any other of our commonly cultivated crops, but this actual food is mixed with too great a quantity of indigestible woody-fibre. If we could get rid of 500 lbs. of woody-fibre out of every ton of dry corn-fodder, the 1,500 lbs. that would be left would be worth far more, in my judgment, than the ton. If I had two acres of good rich land nicely prepared for drilling in corn-fodder, and was offered two varieties of corn, one of which was warranted to produce 6 tons per acre, and another 4 tons per acre, I would take the variety that would produce the smallest crop, in the hope that the 4 tons would contain as much, or nearly as much, actual food as the 6 tons, and if so, it would not only cost less to harvest it, but it would be far more profitable as a milk or flesh producing food than the six tons. "I do not say," continued the Doctor, "that we have varieties of corn that will afford a small yield of unusually rich fodder. But if we have, those are the varieties that we ought to grow. And our Experiment Station might do a worse thing than to investigate this subject."

"Prof. S. W. Johnson," said I, "has made some careful analyses of corn-fodder that are of unusual interest, and his remarks on the subject, like everything from his pen, are of great value."

"Very true," said the Doctor, "but they do not touch the real point. We are told how much corn-fodder was raised per acre, and how much nutriment the crop contained. But that is all. There is nothing to compare it with. It is good as far as it goes, but it does not go far enough."

After the Doctor had gone, the Deacon remarked: "Some people are hard to please. I do not know when I have read anything that pleased me so much as this same paper on corn-fodder."

"It is indeed a remarkable paper," said I. "Just such a paper as one would expect from the author of 'How Crops Grow,' and 'How Crops Feed,'

the two best books on scientific agriculture that have appeared during the last thirty years."

The fodder-corn, analyzed by Prof. Johnson, was grown by Mr. J. J. Webb, near New Haven, Conn. The variety sown was the Southern or Norfolk White. Three bushels of seed were drilled in per acre in rows two feet apart. Two crops were raised, one sown from 10 to 15 days later than the other.

The crop was cut September 1st. The yield of the early sown field was as follows:

When cut, September 1.....25½ tons per acre.
Cured in field, November 11.....5½ " "
In barn, February 8.....8½ " "

The yield of the late sown crop was as follows:
When cut, September 1.....27 tons per acre.
Cured in field, November 11.....4½ " "
In barn, February 8.....7½ " "

It is a curious fact, that 5½ tons of corn-fodder put in the barn, in November, should weigh 8½ tons in February. Prof. Johnson attributes it to the fact that the weather was very dry and fine in the fall, and the corn-fodder was exceptionally well cured in the field. But the winter was very rainy and damp, "and the loosely packed corn-fodder gained moisture."

"I have always known," said the Deacon, "that corn-fodder would get limp and soft in dark weather, but did not suppose that it would attract so much moisture."

"Cattle," said Mr. Strong, who has had considerable experience in feeding corn-fodder, "will always eat corn-fodder better if it is flung out on the barn floor in damp weather, or out of doors where the dew will moisten it. It will gather moisture like a sponge."

The following table shows the average composition of the two crops of corn-fodder at the time it was cut, Sept. 1, and also when well cured in the field, Nov. 11, and again after it had been loosely stored away in the barn until February 10. The composition of the fodder, when entirely free from water, is given in the last column.

TABLE SHOWING THE COMPOSITION OF CORN-FODDER.

	Fresh Cut, Sept. 1.	Field Cured, Nov. 11.	In Barn, Feb. 10.	In the Dry Fod- der entirely free from water.
Water.....	86.11	27.25	54.35	
Ash.....	0.79	4.19	2.64	5.76
Albuminoids.....	0.83	4.38	2.76	6.03
Fat, etc.....	0.25	1.31	.82	1.80
Cellulose.....	0.77	24.97	15.66	34.32
Carbo-hydrates (starch, sugar, gum, etc.).....	7.25	37.89	23.75	52.09

Good clover hay contains about 16 per cent of water. The corn-fodder contains, when fed out in February, 54 per cent—nearly 3½ times as much.

Good clover, when cut just as it is coming into blossom in June, contains 75 per cent of water, but we often let clover grow, until I question whether it contains 50 per cent of water. In other words, it is not as succulent as corn-fodder in our damp sea-shore climate in winter. The relish with which cattle and sheep will eat corn-fodder, after they have been fed for some time on dry hay, is doubtless due to the greater succulence of the corn-fodder. It is not because it is richer. In fact, the corn-fodder grown by Mr. Webb was not nearly so nutritious as good Timothy or clover hay.

Prof. Johnson gives the following table, showing the average composition of German hay and German corn-fodder, as compared with the American corn-fodder. The figures represent the amount of ingredients in 100 parts of the dry hay and fodder.

	GERMAN.		MR. WEBB'S.	
	Meadow Hay.	Red Clover.	Maize Fodder.	Maize Fodder.
Ash.....	7.7	7.4	6.7	5.8
Albuminoids—so-called flesh- formers.....	11.8	16.6	12.4	6.0
Fat.....	2.7	2.7	3.7	1.8
Cellulose—woody-fibre.....	29.9	30.1	29.3	34.3
Carbo-hydrates, (starch, gum, sugar, etc.).....	47.9	43.2	47.9	52.1

The German corn-fodder is quite as nutritious as good hay, but the American corn-fodder is decidedly inferior. This is doubtless due to the fact that

a large growing variety of corn was sown by Mr. Webb. Some of the stalks were 14 feet high. It produced too much woody-fibre. For corn-fodder, we want a small variety and rich land. A lover of celery prefers to grow the "Incomparable Dwarf" rather than the "Immeasurable Mammoth."

In the condition in which the corn-fodder was fed out in the winter, the average yield per acre was 8 tons of corn-fodder, containing an amount of absolute nutriment fully equal to 4 tons of good hay. So far as the yield per acre is concerned, therefore, corn-fodder is decidedly a profitable crop. The objection to the crop is, that it is too bulky—too innutritious. Such a crop as that grown by Mr. Webb could be used to advantage by a farmer who takes horses to board for the winter at so much per head per week. It will keep them alive and healthy. But for cows giving milk, or for young stock, or for fattening cattle, it is not rich enough. We want such animals to eat all the food they can digest, and such corn-fodder as that under consideration is too bulky. The stomachs of the animals will not hold all that could be digested. And in feeding such corn-fodder we must give the animals more or less grain or oil cake. It will pay well to do so, but it would pay still better to grow a richer and less bulky crop.

"It is easy enough," said the Deacon, "to grow a less bulky crop."

"True," said I; "but possibly not so easy to grow a crop rich in nutriment. This is the point that farmers and scientific men should investigate. If I was going to raise peas to cut green for hay, I would not select 'Champion of England.' The 'Little Gem,' or some other dwarf kind, would give a less bulky, but far more nutritious crop of hay; and it can not be doubted that the skill and intelligence which produced the dwarf pea, can produce a dwarf and highly nutritious variety of corn to be grown for fodder. These skillful plant-breeders will give us just what variety we ask for, and we should be careful to ask for that which is really good, and not for that which is merely 'big.' Then, when we have a fine, small-growing variety, we should sow early, on dry land, well and properly manured, either directly or indirectly. We should have a crop, say 6 feet high, and yielding 3 tons of the richest, and choicest, and most easily-digested 'maize hay' that could be cut and bound into sheaves by a reaper, at a cost not to exceed the cost of cutting and curing hay."

"There is one thing," said the Deacon, "in favor of sowing a small variety of corn for fodder. It will cure much more rapidly than the large varieties that have thick, long stalks. The larger the proportion of leaf to stalk, the quicker it will cure."

"That is very true," said I, "and I doubt not that we could cure the corn-fodder, or 'maize hay,' during our hot August or September weather, so that it could be put at once into the barn or stack, just as we do other hay. Such corn-fodder as I raised this year from a small early variety of our common corn, I think might have been stacked with perfect safety, especially if a layer of dry straw had been placed between each layer of stalks. I have tried stacking corn-fodder with greater or less success. I can see now where I have erred. We have postponed the operation too long. When the corn-fodder is well cured, the sooner it is in the stack or barn, the better. It will evidently attract a larger amount of moisture when exposed to a damp atmosphere; and it must be remembered that this external moisture is far more likely to cause the fodder to mold than the moisture or sap which is in the plants. The crop is rich enough in gum, starch, and sugar, to keep it from fermenting; or, if it is not, it ought to be, and would be, if we raised a small rich variety."

PRESENT VALUE OF COWS.—Public sales are a very certain index of values. The following prices realized for cows at recent sales in Eastern Pennsylvania, where there is not only good stock, but an active demand for animals at all times, will tend to show what ordinary farm cows are now worth. A sale of 20 averaged \$42.86 per head; 25 others brought an average of \$53.05 each, and another sale of 55 ordinary good animals made an average of \$52.

A Steam Pump for Irrigation or Domestic Use.

We have been using a steam pump during the

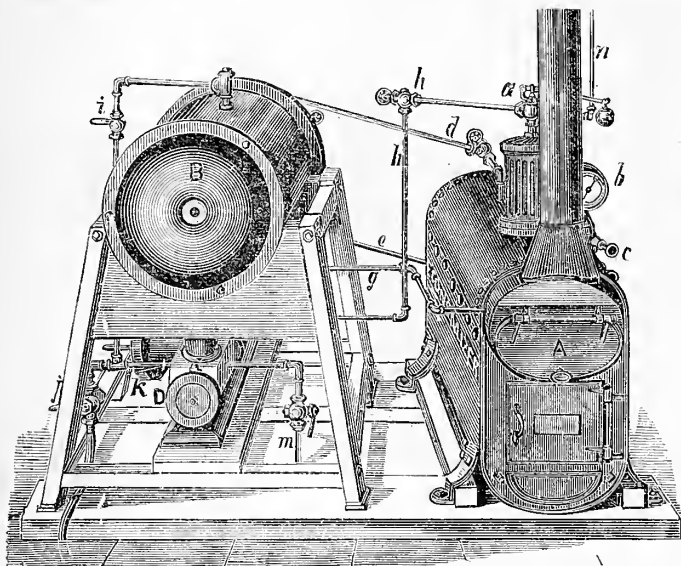


Fig. 1.—FRONT VIEW OF BOILER, TANK, AND PUMP.

past summer, by way of experiment, for irrigation and for pumping water for domestic use. The value of a practicable and cheap method of irrigation for market and fruit gardens, or for private gardens and lawns, and of a certain supply of water for domestic purposes is evident, and it is only necessary to be assured that the method is practicable and cheap, for a large number of persons to avail themselves of it. The pump we have been using is operated by an "Economizer" steam boiler of 2½ horse power, both of which are made by Porter Manufacturing Company, Limited, for Whitman & Burrell, of Little Falls, N. Y. The pump is operated directly by steam from the boiler, without any engine, and so far has worked in a very satisfactory manner. The pump is arranged either separately upon a frame not directly connected with the boiler, as shown at figures 1 and 2, or affixed to the boiler as at figure 3. In the first instance the pump is set upon a frame beneath a tank, which holds a supply of water for the boiler. This is fed directly and automatically by a simple provision of pipes; the water flows from the tank into the boiler as soon as the water-level in the latter falls below a certain point, therefore, so long as there is water in the tank, that in the boiler can never fall below a proper level. All that is necessary to ensure absolute safety in this respect, is to see that the tank is always supplied with water; the tank is provided with a water-gauge that this may be done

nections for carrying steam from the boiler to the pump and for the water supply. The rear view is shown at figure 2. We have had these engravings very carefully made, showing these connections accurately, so that any person may readily put them together. The boiler (A) and tank frame rest upon cross timbers, 4 x 8, to which they are bolted, the rear foot of the tank frame being exactly 11 inches from the rear edge of the supporting timber to which the foot of the boiler is bolted. The front of the boiler at the lower part, is exactly 7 inches in advance of the front of the tank frame. When thus placed, all the pipe connections furnished with the boiler, etc., fit accurately. The tank, B, is placed on the frame above the steam cylinder, C, and pump D, as shown in figures 1 and 2. The following references apply to figures 1 and 2 and partly to figure 3:—*a*, the safety valve; *b*, the steam-gauge; *d*, the steam pipe to the tank; when the water in the boiler falls below the mouth of this pipe, steam

enters, raising the pressure in the tank as high as in the boiler, and forces water from the tank through the water pipe *e* into the boiler; at *f* is the blow-off pipe by which the boiler is emptied; at *g* the exhaust pipe from the cylinder, which discharges into the smoke-stack; at *h*, *h*, is the steam pipe from the boiler to the steam cylinder, with valve; at *i* is the feed pipe to the tank connected with the discharge pipe from the pump, and shut off or opened by the cock shown in the engraving; at *j* is the discharge pipe from the pump; this is made either to connect with a rubber hose or with iron pipes, which convey the water to its destination; at *k* is the balance-wheel, provided with a handle by which the pump may be worked by hand to fill the boiler or tank before firing up; at *l* is the water-gauge, showing the height of the water in the tank; at *m* is the supply pipe to the pump; in figures 1 and 2 this is connected with a well near by; in figure 3 it is carried to a river, from which the supply is drawn. This pipe is 1½ inch in diameter up to the connection with the pump, the discharge being a one-inch pipe. At *n* is the waste steam pipe from the boiler. At figure 3 is shown the arrangement of the pump when affixed to the boiler. This is found to work very satisfactorily in drawing water from a river and forcing it through 1,200 feet of iron pipe to a series of hydrants, from which it is used in the irrigation of a large garden, the supply of several greenhouses, and other uses. Some persons will prefer this arrangement, which is economical of space, while others will choose that shown at figures 1 and 2, in which safety is made so absolute that the boiler may be securely left in charge of an inexperienced man for several hours, if the tank

is left full of water. The pump arranged, as shown in these engravings, has been used for the watering of a garden and lawn of 3 acres through 250 feet of rubber hose, and for the supply of a tank in the dwelling house, the hose being connected with the tap (shown in figure 4) upon the supply-pipe to the tank in the attic. The lower tap closes the connection with a hand force pump, (Blunt's Universal Pump), kept for use in case of accident. With a pressure of 20 pounds of steam, the water is forced through the hose and a ½-inch nozzle, and thrown 50 feet from the nozzle. After some months use of the pump, which is shown without any connections at figure 5, we find it to work very well, and to cost so little, that, to say nothing of its other valuable uses, it is more economical than the employment of a man once a week to fill a tank holding 1,000 gallons of water, by hand. The boiler is heated very rapidly, a little waste wood being sufficient to get up steam and run the pump for an hour or two. In a dry season, or even in the few dry weeks of spring, when garden crops are in a critical condition, the whole cost of the boiler and pump might be saved in the rescue of young plants from drouth, or in the rapid forwarding of their growth,



Fig. 4.
CONNECTION.

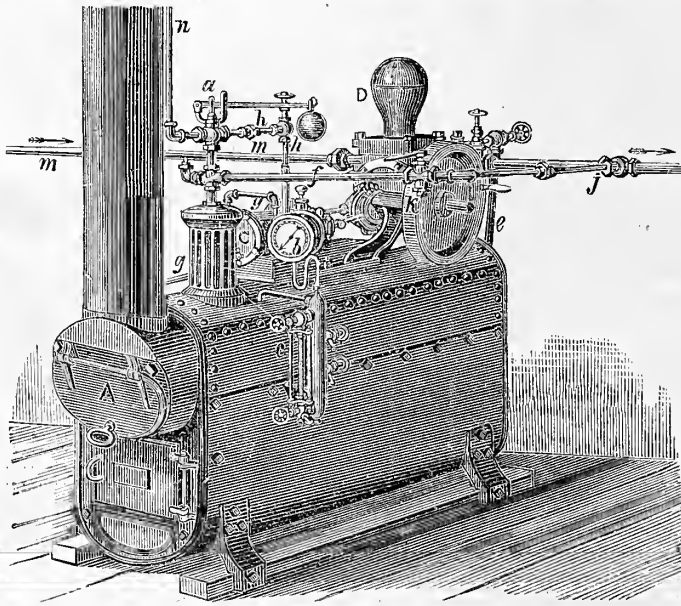


Fig. 3.—PUMP UPON THE BOILER.

in preserving the fresh verdure of a lawn, or in furnishing a supply of water to a stable or barn yard.

CANNING RABBITS IN AUSTRALIA.—An instance of the profitable use of what has been, and yet is, a most destructive pest in Australia, is given in the new business of putting the flesh of rabbits in cans for exportation to Europe. Formerly these rabbits existed in such numbers, that not only were the farm crops completely destroyed in some districts, but the grass was devoured, and the sheep pastures rendered useless. Many devices for their destruction were tried without success, until the idea

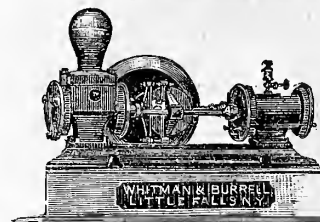


Fig. 5.—PUMP.

of turning them to account was put into practice. A company was formed which steadily employed a number of hunters to trap the rabbits, for the purpose of dressing their flesh for canning. About 200 tons of the meat have so far been put up, and 5,000 rabbits per day are now canned. The heads are boiled down to glue, and the skins are

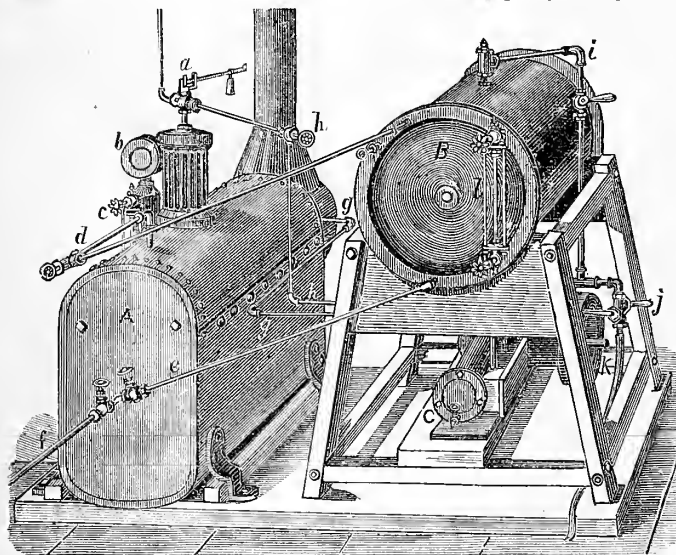


Fig. 2.—REAR VIEW OF BOILER, TANK, AND PUMP.

without difficulty. In figure 1 is shown the front view of the boiler, tank, and pump, with the con-

nections for carrying steam from the boiler to the pump and for the water supply. The rear view is shown at figure 2. We have had these engravings very carefully made, showing these connections accurately, so that any person may readily put them together.

preserved for sale to hatters, who use the fur. The farmers are still troubled with the pests, but such wholesale destruction must in time have the effect of reducing their ravages. In parts of Oregon, rabbits have caused very extensive destruction of crops, and a hint may be gathered from the Australian plan, which may lead to measures of relief and turn the pests to profit.

Some Useful Corn Mills.

Corn is so cheap that many do not take the trouble to be saving with it, and no grain is so wastefully

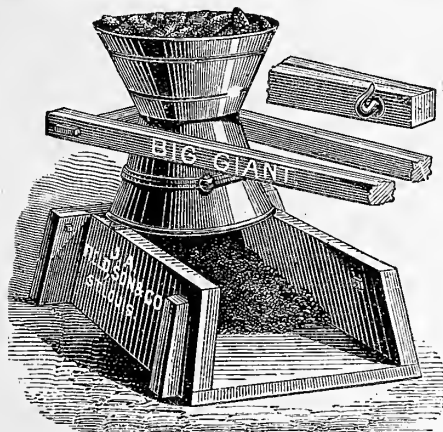


Fig. 1.—"BIG GIANT" CORN MILL.

used. Economy is too rarely considered on American farms. "Lightly come; lightly go," seems to be the principle on which we all are too ready to act, and we throw out our whole grain with a liberality that is both wasteful and costly. Now it is certain, that grain when crushed or ground is worth more for feeding than when whole. It is eaten with less muscular effort, which is in reality no inconsiderable gain, as for every movement of one single muscle there is an expenditure of vital force which requires the consumption of some food to replace it. Ground corn is also more easily digested, and there is less loss of undigested grains, which are carried off with the excrement—a loss which is in some cases equal to a quarter or a half of the quantity fed. To get our grain ground costs 11 per cent of it. For every 10 bushels taken to the mill, we get 9 returned, a cost of one-ninth. For every \$9 worth of corn fed, we pay the miller one dollar. In feeding \$500 worth of grain, then, the loss is equal to \$55. Many farmers pay this amount every year, and besides lose many days time in going to and returning from the mill. Now it is very plain that if a farmer, who has been in the habit of feeding this quantity of grain every year, could procure a mill for the same amount that he pays yearly for his grinding, the mill would be paid for in one year, and ever afterwards the grinding would cost nothing, because it would take no longer to grind at home than to go to the mill. Many farmers, if such a mill be pointed out to them, will avail themselves of its advantages at once. A mill

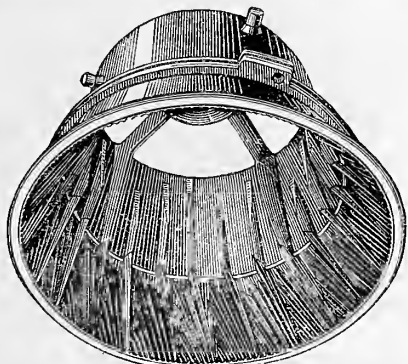


Fig. 2.—OUTSIDE SHELL OF "BIG GIANT."

that will grind 20 bushels of corn-ears, or 15 bushels of shelled-corn, into meal in an hour, with two horses attached to the sweep, is shown at figure 1. It is the "Big Giant" corn mill, made by Jas. A.

Field, Son & Co., of St. Louis, Mo. The engraving shows the mill set in its frame, ready to be staked to the ground, or to be bolted to a barn floor. It is operated by a sweep, to which the horses are attached, and which embraces the outside shell of the mill, which is shown at figure 2. The inside cone is shown at figure 3. The cutters are arranged upon the upper part of the cone, and the grinding parts at the lower portion. The outside shell is similarly arranged, and by elevating or depressing the latter, by means of set screws, the meal is made coarser or finer. Corn in the ear, or ears with the husk, as stripped from the stalk, may be ground in this mill as easily as shelled corn, the cob being reduced to meal with the corn. The advantage of this to large hog, cattle, or sheep-feeders, is apparent at once. In grinding corn in the shuck, a little extra care in feeding the mill will be necessary. Having seen this mill at work, grinding both shelled corn, and ears yet green from the field, into meal, we can say from personal inspection that it does its work easily and excellently, and is a valuable and effective machine. This mill is also made with gearing, to be operated by water or steam power.

At figure 4 is shown a combined corn-sheller and mill, known as the "Mishawaka Feed Mill," made by the St. Joseph Manufacturing Co., of Mishawaka, Indiana. It shells and grinds at the same time, or does either separately. It can be operated by hand or by power; with power it grinds 15 bushels an hour. The grinding plates are made of hard iron, and are expected to grind 1,000 bushels without being renewed. When worn, they are replaced with little cost and great ease. The mill is simple, durable, and works with light power. It grinds fine enough for feed only. Another useful feed mill is the "IXL" Mill (fig. 5), of the U. S. Wind Engine and Pump Co., of Batavia, Ill. This is



Fig. 3.—INSIDE CONE OF "BIG GIANT."

wholly of iron, and is run by power. The chilled iron grinding plates have grinding surfaces on both sides, and can be reversed. One set is expected to grind 4,000 bushels before they are completely worn out, when they can be replaced. To own one of these serviceable mills, could not fail to be profitable where a large quantity of grain is fed; and where but little is used the convenience of having one's own mill may still be enjoyed if a few neighbors could join in purchasing one. That would save many a tiresome journey to and from a grist mill in disagreeable weather, and over bad roads.

Why We Should Grow Wool and Mutton.

The consumption of wool in the United States is far ahead of its production; a certain market is therefore offered for all we can produce. For several years past, the operation of a tariff has rendered the market for our wool steady and profitable to the growers; and which has helped, if it has not induced, an extension of sheep culture beyond any precedent, and at the same time greatly encouraged the woolen manufacture. The growth of wool and its manufacture into various fabrics, are necessarily closely related industries, and one flourishes or suffers with the other. At the pres-

ent time, our woolen manufactures surpass in excellence those of any other country. The Centennial Exhibition proved this. The finest broadcloth there, was made in the State of Maine, but it is mortifying to us to have to confess that the wool was brought from Silesia, while we are as well able to grow it as are the German farmers. The American

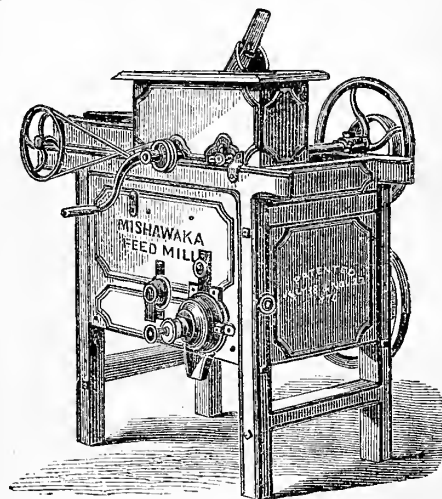


Fig. 4.—THE MISHAWAKA FEED MILL.

cassimeres were not excelled by any from foreign countries; these are made from American fine to medium or merino wool. American flannels are better than similar European fabrics, because they are made from American wool, which is better than any we could import for this purpose. Our blankets are superior to any foreign ones; those made in California and Minnesota surpassed any others that were shown at the Centennial, and the Minnesota blankets are actually exported to Europe for use in railroad sleeping cars. American knit goods of the very best quality are made from our combing wools. A most beautiful fabric, the America "India" shawl, is made from our finest long wool. Our worsted fabrics, delaines, and cashmeres, are made from our home-grown wools; but our alpacaes are made from English combing wool. These last mentioned goods are so excellently made that they are excluding foreign fabrics, and are helping to turn the balance of the foreign trade greatly in our favor. One mill used for these goods 10,000 fleeces weekly. For the first time in our history, our national flag is made of American grown Cotswold wool, as are also the present fashionable bunting goods for ladies dresses. In carpets we excel the long-famed English manufactures. Over 100 factories in Philadelphia, alone, are making carpets, and others are at work in scores of villages and towns. "Ingrain," which has two colors in a line; "three-ply," which has three; "tapestry," which is printed; "Brussels," which is dyed in the yarn; "Wilton," "tapestry-velvet," and "Axminster," which are all velvet; all these are now made in this

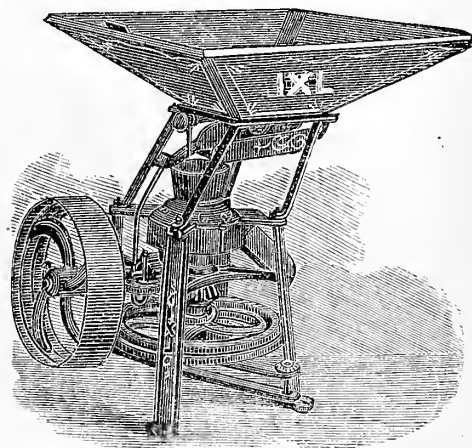


Fig. 5.—THE IXL FEED MILL.

country and sold so cheaply that almost every house in the whole land has carpets upon its floors. Lastly, the worsted coatings, with which our men of all degrees and professions are clothed, are

chiefly made from our home-grown medium wools, and were it not for the foolish fashion, which induces many persons to choose cloths of professedly foreign make—but for the most part really home made—we should rarely see any but an American brand upon all our woolen piece goods.

These facts convey an important lesson to the farmer. If he wishes to keep sheep he need not long consider what kind he should select. *Any kind of wool will find a market.* The coarse, short carpet wools of the poor Texan and low grade sheep; the medium wool of the South-Downs, and the half and quarter Merinos; the fine short and long comb-ign, merino wools; the very fine Silesia wools; the long wools of the Lincoln and Cotswood; all these are used and wanted, and none of them come amiss to the manufacturer. But it must be kept in mind that the best sheep is one that produces both wool and good mutton. Mutton is now becoming a staple food in America; 25,000 to 30,000 sheep and lambs are sold every week in the New York city markets. Therefore a sheep that will produce a good carcass of mutton is the kind to be chosen, irrespective of its fleece, by the general farmer. The sheep ranges of the West will produce wool without regard to mutton, because this is most easily transported. No product of the farm is so cheaply carried in proportion to its value, as wool. \$100 worth of wool is carried from Chicago or St. Louis to New York for \$4; while to transport the same value of beef the same distance costs \$20; of pork, \$30, and of corn, \$50.

These figures will help to give one an adequate idea of the staple and permanent character of the wool growing industry, and of its certain profitability. We might strengthen the force of these by a reference to the advantages gained by farmers in the way of improved cultivation, and the increasing fertility of the farm through sheep culture. Of these we cannot now speak, but they are by no means unworthy of regard, nor do they admit of any question as to their certain effectiveness. It is enough now to show that the farmer has a certain market for whatever kind of wool he may grow, if it is good of its kind, and that the mutton is as readily salable as the wool.

Hints and Helps for Farmers.

A "CRAB" FOR SHOCKING CORN.—"H. S. S.," Riverside, Iowa, sends a sketch of a "crab" for supporting corn until the shocks are set up and tied. It is made of a block of wood, 8 inches long, and 2 inches thick, into which one of the legs, four feet long, and an inch and a half thick, shown at figure 1, is fastened securely. The other two legs are loosely inserted, so that when the shock is completed they may be pulled out; when the head of the "crab," with the remaining leg is removed, and the contrivance again set up for another shock. This is found very useful when corn is shocked in wide rows for plowing for wheat. The plan followed is to cut 6 rows, throwing three rows on each side, and then plow that strip and set up the

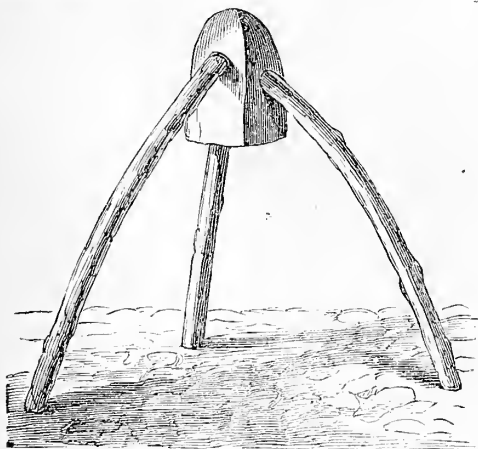


Fig. 1.—CRAB FOR SHOCKING CORN.

crab for shocking on the plowed ground, then cut 6 more rows on each side, making 18 rows in all,

finish the shocks and go on with the plowing. Then repeat the process.

A NEW BUTTER WORKER.—To work butter with the hands destroys the texture and quality, and to use the common butter ladle is hard work for the hands and arms. A machine that will effectively do this work will be found a great help and convenience in the dairy. We recently procured a butter worker, which is shown at figure 2, made by Henderson & Co., 316 Race Street, Philadelphia, which performs very satisfactorily. It is easy to work, and a child can operate it. The table or tray is hollow, so that the butter-milk runs to the center and there escapes through the perforated spindle into a pail beneath. The ladle rotates, and its action is that of the common hand-ladle in working the butter and freeing it from butter-milk. The gearing is covered, so that no butter can work into it.

Fig. 2.—BUTTER WORKER.

The whole can be taken apart in an instant and cleaned. From 25 to 100 pounds of butter can be worked at one time with the different sizes; the largest size being well adapted for use in country stores where butter, of different qualities and colors, has to be mixed and worked together.



Fig. 3.—HEDGE GUARD.

To PREVENT COWS GOING THROUGH HEDGES.—"H. S. S." fastens a pole 4 feet long to the horns by a strap, as shown at figure 3; to prevent them from pushing down fences, he fastens the T-shaped board (figure 4) on to the horns by the holes seen in the engraving, at the lower end there are a few sharp-pointed nails, which will not prick the nose unless the cow attempts to push against the fence; when the nails give her a sharp reminder that she is trespassing.

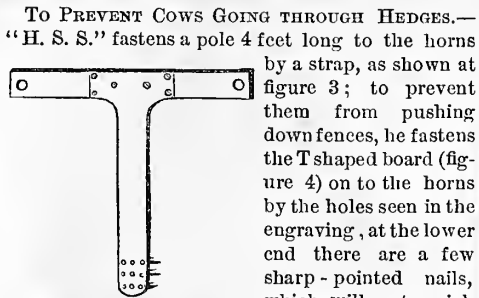


Fig. 4.—FENCE GUARD.

A FEED-BOX FOR SHEEP.—"J. H. S.," Logan,

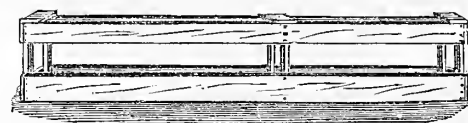


Fig. 5.—BOX FOR FEEDING SHEEP.

Ind., sends a description of a feed-box to accommodate 25 to 35 sheep, an engraving of which is shown at figure 5. The box is made as follows:—The posts, six in number, are 28 inches long, and 2 x 2 1/2 thick. The boards for the bottom and sides are 16 feet long, the former is 14 inches wide, the lower side boards are 10 inches wide, and the upper ones 6 inches; this leaves an open space of 10 inches for the heads of the sheep, which is ample. This sort of box answers well for feeding cut clover, hay, or chopped roots, and prevents the sheep from standing upon and fouling their feed, or getting litter into their wool.

HOW TO USE A GATE FOR SEPARATING STOCK.—When the gates, A and B, are arranged as in figure 6, and both opened together, they will meet at D. If they are then hooked together, small stock only can pass through, as the space is but 18 inches. To move large stock from lot No. 1 to No. 2, the gates are both opened to C, and latched to the post there. This opens lots 1 and 2, but keeps No. 3

closed. To throw all open at once, the gates are swung back to E and F, and latched on to the posts;

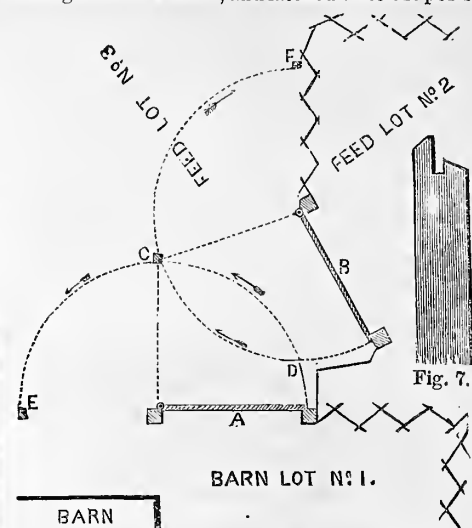


Fig. 6.—DIAGRAM OF GATES.

the tops of the posts being cut for this purpose, as shown at figure 7.

A BULL RINGER.—A subscriber sends us a small piece of wood, cut and smoothed to the shape shown at figure 8. This is made to fit the thin part of the ring, tightly, so as to hold its place. The end of the ring, protected by this piece of smooth wood, is passed through the hole made in the bull's nose, much more easily and less painfully than the sharp-edged portion of the ring. When the ring has been inserted, the piece of wood is removed, and the ring fastened in the usual manner.



Fig. 8.

Sloping-Toothed Harrows for Cultivating Growing Crops.

For some years past it has been the practice of many of the better class of farmers to harrow their young wheat, oats, corn, and potatoes, to destroy newly-sprouted weeds, and to loosen the soil. Fall wheat has been harrowed, soon after it had taken a secure hold on the soil, before the winter had set in, and in the spring as soon as the soil had become firm and dry. This has proved to be greatly beneficial to the crops. Young corn, also, has been worked with the harrow until it was a foot high, and with benefit. Still the excellent practice of harrowing young crops is not nearly so general as it should be, and in order that our readers may become better acquainted with it, and the kinds of harrows used for the purpose, we give the accompanying illustrations of two implements designed for this use. These harrows should have, then, teeth slope backwards, at an angle of about 45 degrees; should be light, and their teeth should be fine and sharp. A harrow of this kind is hardly suitable for other uses, and few farmers can afford

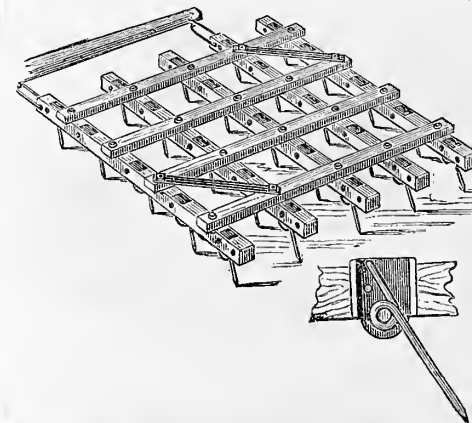


Fig. 1.—SLOPING-TOOTHED HARROW.

to have a different harrow for every different work. The implements we here describe are made to meet

the needs of farmers for all kinds of work; for smoothing the ground after plowing, for covering seeds, for gathering weeds and roots from the soil, for stirring summer or fall fallows, and for cultivating growing crops in the manner above mentioned. To meet all these needs, the device of movable teeth has been adopted. When these harrows are drawn one direction, the teeth slope, and they can then be used as cultivators, for covering seed, or harrowing lightly-turned sod without disturbing it. When they are reversed, the teeth are upright, and perform the ordinary work of the common harrow. In principle, both these harrows are similar, but in construction they differ. That

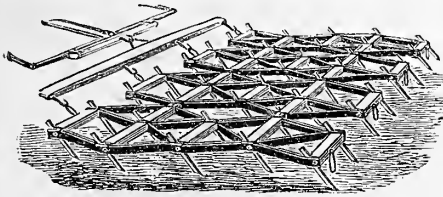


Fig. 2.—BRADLEY HARROW.

of which one-half is shown at figure 1, which is made by the New York Plow Co., of New York, has a wooden frame, and the teeth, of elastic steel, are loosely hung or attached. This device gives the harrow a peculiarly easy motion over growing crops, so that no injury is done to the plants, and the teeth, in passing over the slight depressions in all plowed soil drop down and do their work in those low spots, that would otherwise be passed over without being touched, unless the harrow should run so deeply as to injure the young plants. The illustration shows only one-half the harrow, which is very broad, covering 10 feet in width. A separate tooth is shown, which illustrates its peculiar structure. When the harrow is reversed the teeth are straight and rigid. At figures 2 and 3 are shown the "Bradley Harrow." This is also reversible, and acts in each of the methods we have described, as

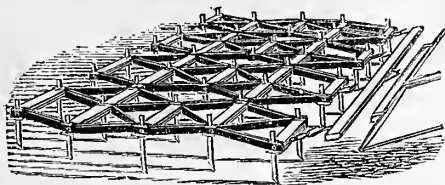


Fig. 3.—BRADLEY HARROW REVERSED.

it is drawn in one direction or the other. This has an iron frame, and is so hinged that it bends and conforms to the surface of uneven ground. It is made by the Bradley Manufacturing Company, of Syracuse, N. Y., for whom Messrs. R. H. Allen & Co., of New York, are the sole agents.

The use of these harrows is one of the modern improvements in agriculture. Good farmers estimate the increased yield of grain from harrowing at 5 bushels per acre, and upwards. This is a moderate estimate, but it does not include all the advantages gained. Perhaps the destruction of weeds, which is not only a present benefit, but a permanent improvement to the soil, is of greater value than the increase of crop. A clean field is not only a pleasant thing to see, but the absence of weeds brings money to the pocket in enlarging our crops and in saving labor. A weed killed is so much gained, with the addition that an immense progeny is prevented from following it. Those who have harrowed their grain crops will always continue the practice; those who have never done it, should by all means make the experiment the coming season.

The Trial of Farm Steam Engines at Syracuse, N. Y.

The New York State Agricultural Society, with commendable enterprise, held a competitive trial of portable farm steam engines, at Syracuse, N. Y., on the 12th of November last. The rapidly extending use of steam engines on the farm makes it very desirable that the peculiar merits of the many

good engines now in the market should become widely known, and a public trial is an excellent means to this end. The trial took place at the large foundry room of the Bradley Manufacturing Company. The trial was under the superintendence of a Committee composed of James Geddes, Esq., Vice President of the Society; Prof. Green, of Troy, N. Y., and Henry Waterman, of Hudson, N. Y. The engines subjected to trial were the "Economizer," 10-horse power, made by the Porter Manufacturing Co.; the "Mills," 10-horse power, by the Fish-kill Landing Machine Co.; the "Westinghouse," "Birdsall," "Eclipse," "Mansfield," "Oneida," "Watertown," "Payne & Son's," and a 6-horse power "Economizer," engines. The test applied was the driving of a double-acting pump. Records were made every 15 minutes of the velocity of the engines, the revolutions of the pump pulley, the pressure on the pump, and temperature of the feed water. The water and coal used were accurately weighed. Each test occupied 4 hours. Each of the engines seemed to work well, but the actual result cannot be ascertained with exactness until all the recorded data are figured out and compared. This will require some time, and the report cannot be had until the Committee have concluded their labors. A number of farmers and thrashers were in attendance, and closely watched the proceedings.

Poultry-Keeping—How to Begin.

There is a very general desire to engage in keeping poultry. The business does not require hard work; and is attractive and agreeable. It also promises to be profitable, and profit is the chief inducement to the majority of the novices who desire to attempt it. A few general cautions are needed by those who would undertake this business.

A novice can not, by the mere use of money, take up poultry-keeping and make a success. On the contrary, he will be more than likely to lose all the money he invests, if he supposes that the business consists only in buying some fowls and feed, and in selling eggs and chickens, by simply permitting the hens to produce eggs while he gathers them. Success only comes to the long-experienced poultry man who knows precisely what is to be done to secure this result. It is best to begin with a few fowls, making their keeping a secondary business, until these can be managed with success and profit. Then the number may be increased, and when the business pays sufficiently, then sole attention may be given to it. It is more profitable to purchase fowls than eggs. This is a simple matter of figuring. If a dozen of eggs of choice fowls are procured at a cost of say \$5, a year will elapse before any profit can be gained from the three or four pullets that may probably be hatched from them. If a trio of birds are purchased at a cost of say \$20 now, a number of eggs will be procured before setting time arrives, and then each hen may bring out a brood of eight or ten chicks. After these are raised, more eggs will be laid, and if good care is given, there may be on the whole 20 dozen of eggs, ten pullets and ten cockerels, as the produce of this trio within the same time that it would have taken, from the dozen of eggs first mentioned, to produce three or four pullets. There is an obvious difference in favor of beginning with birds, both as to profit and time.

CHEAPNESS OF PRODUCTION.—In every department of industry the tendency is, to reduce the cost of production, by means of more effective methods and more skillful work. We are even now securing many foreign markets for produce, and for manufactured articles of many kinds, merely because we can produce them cheaply. We are exporting iron, steel, and tools of various kinds, as well as machinery, from locomotives and other heavy engines, to plows and apple-parers. We are sending off cutlery, cotton goods, leather, boots and shoes, clothing, as well as a vast amount of small articles of hardware, "notions," and rubber goods, with agricultural and other raw produce. Generally,

agriculture is beaten in the competition for cheapness of production, and the export trade does not satisfy farmers as to the prices realized. We shall soon mend this in other produce, as we have already done as regards the production of beef, which is exported at a satisfactory profit to the stock men. They have cheapened their product by the use of improved stock, and a similar course of improvement must be pursued in all departments of agriculture, by the use of the best methods and the best stock, seeds, machines, and implements. If by the use of these we lessen the cost of our products, we add to our profits to the same extent; and if we increase the amount of our products at the same time, we can afford to sell cheaper, and yet make more profit than we now do.

A Promising Forage Plant—"Egyptian" or "Pearl" Millet. (*Penicillaria spicata*.)

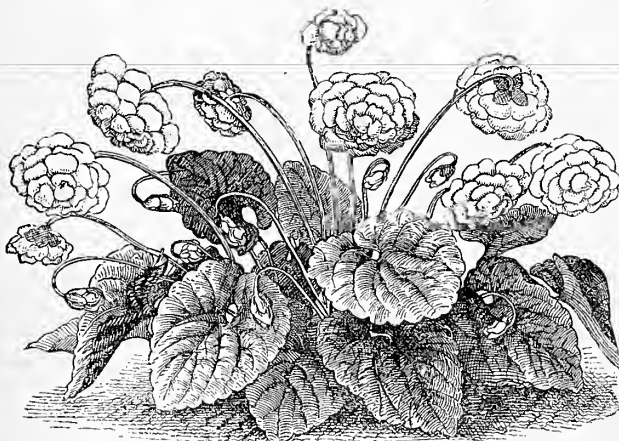
One's knowledge of a plant sometimes comes in a very roundabout way. Several years ago, at one of the meetings of the American Pomological Society, we found that one of the members from Tennessee, in anticipation of meeting us, had brought a bundle of grasses to be named, among them was one, which, under the not very elegant name of "Horse Millet," was highly esteemed in his neighborhood, but of which he could give us no history. Taking the specimen home, we, upon examination, determined it to be *Penicillaria spicata*. Some botanists do not consider the genus *Penicillaria* as sufficiently distinct from *Pennisetum* but this is not the proper place to discuss this point, and the name *Penicillaria* will answer well enough at present for the grass. Sometime last winter, Mr. A. S. Fuller, the accomplished agricultural editor of the "N. Y. Weekly Sun," received a specimen of the same grass from one of his Southern correspondents, of which he kindly gave us a share, and we intended to cultivate the plants and thus get specimens for an illustration and materials for an article, on what we supposed was an entire novelty. Illness at just the time when spring operations began upset this and other experimental planting, and though we failed to sow the seeds, our friend Fuller did sow them, and obtained a crop of the Millet, concerning which he gave a full account in his department of the "Weekly Sun." But the strangest thing of all is, that the plant is comparatively an old one, and was tested long ago in Connecticut. The knowledge that we were seeking concerning it had already been acquired, and in good part recorded by our former associate, Col. M. C. Weld, who, before he was connected with the *American Agriculturist*, edited that excellent paper, "The Homestead," at Hartford, Conn. Col. W., without knowing that the plant had been under investigation by us, sent an article giving his experience with *Penicillaria*, which he had tested some twenty years ago, and which he had at that time given some account of in "The Homestead." Col. Weld's article was written last spring, but we did not publish it then, as we wished to accompany it with an engraving. This we are now enabled to do through the courtesy of Mr. W. H. Carson, seedsman, No. 125 Chamber St., N. Y., who has secured a limited stock of the seeds. We saw Mr. Fuller's plants, and think that, on account of its short joints, the amount of foliage is greater than that of any forage plant we have seen, not excepting Indian corn. Col. Weld's account closely agrees with that given by Mr. Fuller. Col. W. says:

"I had sent to me the seed of a tall, leafy, luxuriant, rapid-growing grass, that was highly valued in Florida, under the name of 'Egyptian Millet.' We distributed a good deal of seed from our office, and the following results were very uniformly obtained: (I have refreshed my memory from files of 'The Homestead,' especially from the volume for 1857-8.) It would not mature in Connecticut, hence we obtained our seed from the South. It often attained the height of six to eight feet before showing a head. It was very small and unpromising at first, but finally 'tillered' enormously, producing a great many suckers, or rather

stems from one seed. Plants were not uncommon, exhibiting fifteen or twenty stalks, and sometimes as many as twenty-four were thrown up. If cut when three or four feet high, for feeding green, it might be cut several times in one season. The stalks were not large when standing rather thickly, but quite tender and sweet, even when dry. It was exceedingly leafy and succulent when green, and was greedily devoured by cattle. Cut when the heads appeared, and dried as hay, or corn, it made sweet palatable hay, and was much more easily cured than corn-fodder. The largest actual yield reported was over nine and a half tons of dry fodder, per acre. This crop was left until after severe frost, in the vain hope of securing ripened seed, and the amount of fodder had been materially diminished, so that the estimate made then, that, had it been cut before frost, not less than twelve tons would have been harvested, is not improbable. The seed was sometimes obtained clean and sometimes in the chaff, each seed being surrounded by a sort of bristly envelope. The naked seed is somewhat top-shaped, and very small, of about the color of Timothy seed. It was sown in rows or drills, twenty inches to two feet apart, about ten seeds to the foot. It made very slow growth, and seemed unpromising at first, but when the weather became hot, the main stem and tillers shot up very rapidly, until it stood eight to ten feet high, and astonished every one by the immense amount of fodder which a piece of land would produce." In view of the general interest now taken in the Millets, Durra, Guinea grass, and similar fodder crops, we give this, as we have given others, with the best information we can obtain concerning them. Fodder crops of various kinds, in this country, come in competition with Indian Corn, which, though an excellent fodder plant, is not so perfect that our farmers are not warranted in assuming that there can be none better. Should this come into favor, our dealers can readily have the seed grown for them in the Southern States.

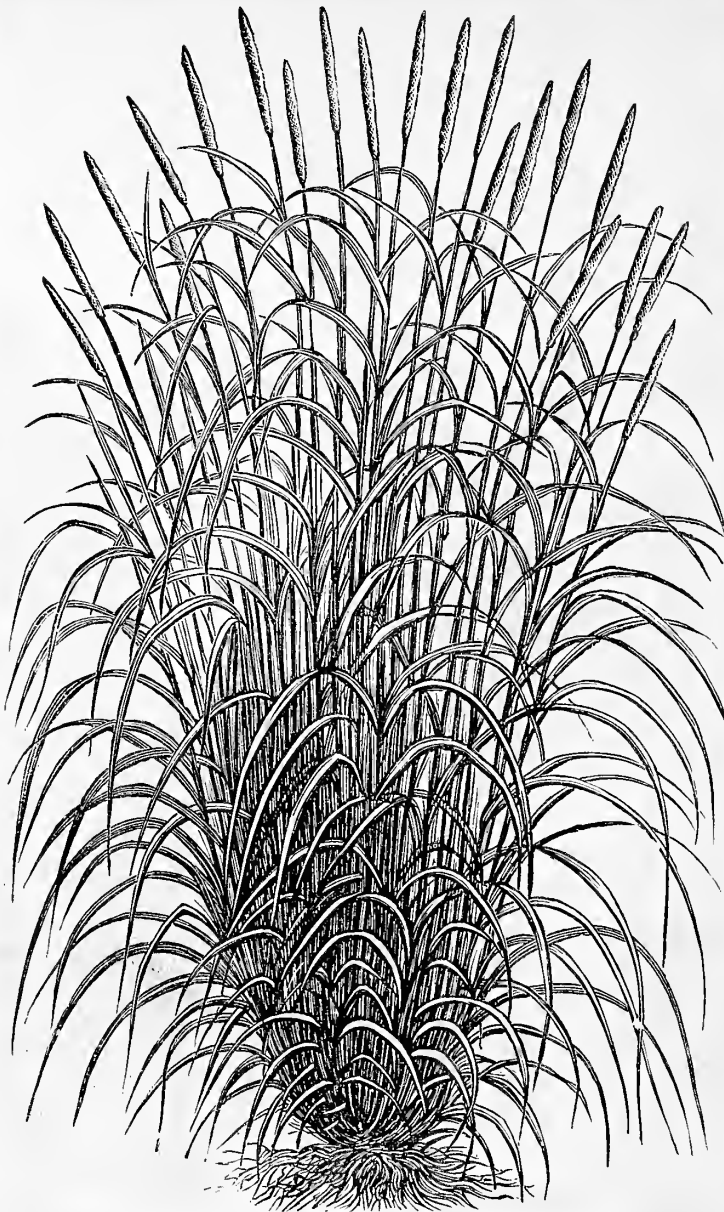
A New Double White Violet, "Belle de Chatenay."

It is probable that no one, in looking at the flower of the new double violet, Belle de Chatenay, itself, or its engraved representation, apart from the



DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

leaves, would recognize it, at first sight, to be that of a violet. The flower of the single violet is characteristically and regularly irregular, while in this double variety all semblance to the usual structure



EGYPTIAN OR "PEARL" MILLET.—(*Penicillaria spicata*.)

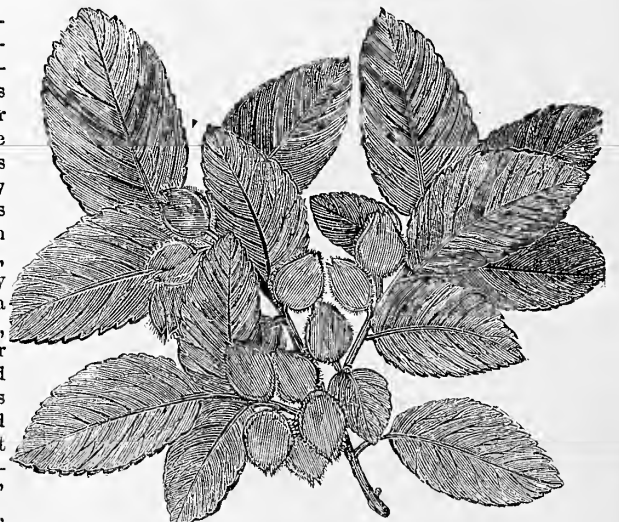
of the violet is lost, and we have in place of the normal flower a mass of petals heaped up upon one another to make a "full double." This novelty was introduced by M. L. Paillet, of Paris, the past summer. The attempts of the French nurserymen and florists to give us their catalogues and descriptions in English are sometimes very amusing, and, though M. Paillet succeeds better than some of his countrymen, his description is of the French—Frenchy. He says: "This new Viola is sent out for the first time by me the present season, and is the beautifullest variety known. The flower is very large, about one inch and third in diameter, very double petals, very well set in order like a double camellia flower, pure white and the border of petals embroidered with red purple lilac. This variety is very hardy and will be a precious plant for forcing or market purposes. Variety extra." After all this description, the concluding "variety extra" seems as much an

anti-climax as Mr. Paillet's countryman's comments on a sunrise at sea, when he exclaimed: "Voilà! tres grande! tres magnifique! very good!!" Still, in spite of the producer's enthusi-

asm, we incline to the belief that the plant will warrant it. We have received a specimen from the greenhouse establishment of Henry A. Dreer—an establishment in which, by the way, a worthy son sustains the reputation of our lamented friend, his father, in quietly introducing choice novelties.

Aside from the growers who supply the demand of cities—and it is a large one—for violet flowers, the choice varieties of the European fragrant Violet (*Viola odorata*) are not much grown. Beyond a clump of the common single form in a shady place, to give its sweetest of all flowers in early spring, we see but little attention given to the violet in private gardens. With but little trouble, one may have violets from January until in May they bloom in the open ground. Plants, obtained by setting out runners in spring in rich soil, and giving all the water they need in dry weather, may be set in early autumn in a common cold frame. Allow them to grow until winter comes, then fill up with leaves, put on the sash, and a shutter over that. When flowers are wanted, remove the sash, and take off the leaves, and if the plants were strong, and well furnished with buds, they will begin to bloom in a week or two. Of course, the plants must be treated like others under glass, and have abundant air on mild days, and water as needed. A frame of three sashes, with boards to separate it into three parts, may be uncovered, one sash at a time, at intervals of two or three weeks, and thus keep up a succession of these most charmingly fragrant and universally popular flowers.

THE ONION MAGGOT.—A correspondent of the "Journal of Horticulture" (London) advises the use of hot water, "a little off the boil" to destroy the onion maggot. This he says, if taken in time, is effective, but if the maggots are not attended to before they have eaten their way into the substance of young onions, and are thus beyond reach, neither this nor any other application will be of use. When we last spring mentioned the use of hot water to kill the cabbage worm, and advised its trial, we received a letter of protest from a Canada correspondent. This gentleman, who thought our publication showed a lack of the proper knowledge of the re-



THE THICK-LEAVED ELM.—(See page 22.)

lations of heat to plant life, may now turn his attention to the mother country, where they are so lacking in "common sense" as to use this very old method of killing several kinds of insects.

Small Evergreens for Small Places.

Under the heading here given, we, in November last, called attention to the folly of planting evergreens, which in a few years will become forest trees, in front yards, on small lawns, or other places where the trees, when even half grown, will

be such that the well-developed tree will be too large, do not plant it. There is no greater fallacy than that which leads to the crowding a place with young trees, for immediate effect, with the idea of cutting out the superfluous ones when they become crowded. The idea is a capital one—the trouble is, people will not carry it out. If one who has planted the trees really loves them, and has no place to

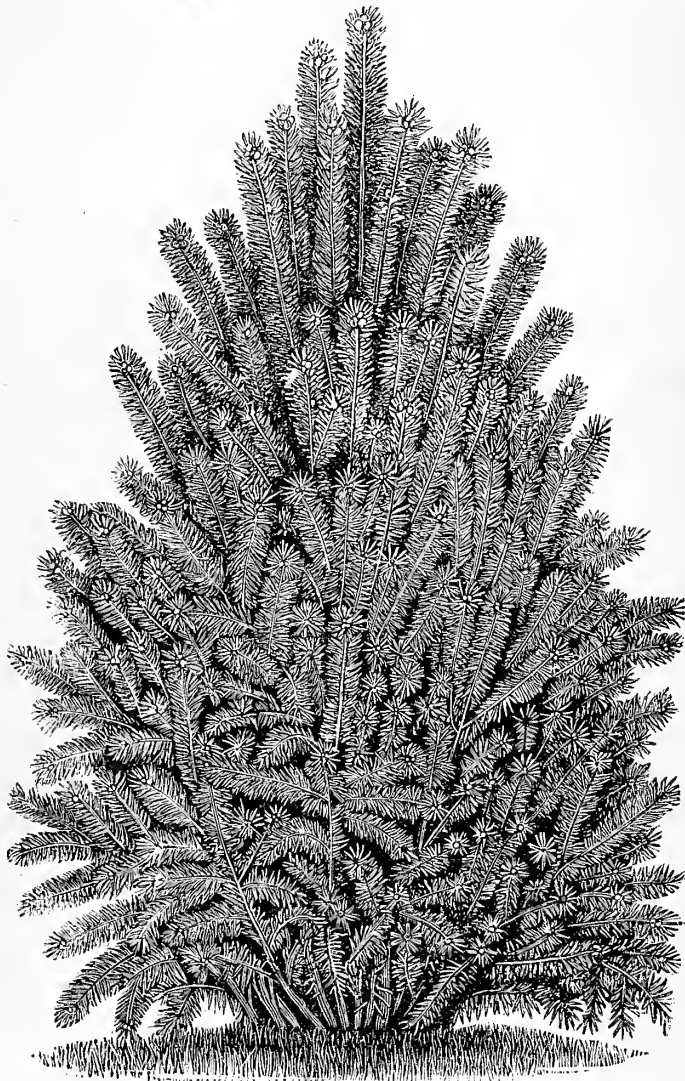
from the typical form of the species, that the quick eye of the cultivator will notice it, and set it apart from the rest to test its merits. The Norway Spruce (*Abies excelsa*), being here and abroad one of the most popular of evergreens, has been largely raised from seed, and has, of course, produced a number of seedlings so strikingly unlike the usual form, that they have been continued in cultivation. The cata-



THREE-COLORED TROPAEOLUM.—(See next page.)

be found altogether too large for the situation. An example of this is to be seen in a village through which we frequently pass. The front area, scarcely 10 feet wide, hardly merited the name of a yard. Years ago this space had been ornamented by two little White Pines, and very prettily they looked, no doubt; for it is difficult to find a more graceful little tree than a well-grown White Pine about five or six feet high. But these pines would not stay small, and when we first knew them, had grown as tall as the brick house, against which they stood in a sort of halved state, for their branches could not develop in that direction, and there they stood, two great green fans, quite hiding the house and shutting out light and air from the windows. Recently this, as sooner or later happens to all this ill-advised tree-planting, came to an end, and these trees, set out with so much care, and regarded for a few years with so much interest, are now kindling wood. In these winter days, when all prudent planters are thinking over their plans for next spring—and by planters we include those whose grounds are measured by square yards and rods, as well as those who reckon by acres, the smaller places requiring much more thought than the large ones—it is all important to look beyond the immediate effect, and consider what will be the condition of the trees 10 or 20 years hence—not only with respect to evergreens, but to deciduous trees also. Those not well acquainted with trees, can readily learn from books the size to which the different kinds will reach when full grown, and if the size of the place

which he can transplant his surplus, he will hesitate to put the axe to those of which he has watched the growth for several years, and though his judgment tells him that it will be better for those that remain to cast out one half, in fall he puts off the cutting until spring, and in spring he finds a ready excuse for postponing it until the next fall, and so it goes on, the trees grow up as a thicket, and the beauty of the whole is spoiled. It is easy to find examples of this mistake in all parts of the country. Fortunately for owners of small places, there are trees especially suited to them. If they put off their selection until planting time, and then send off a hurried order, they are likely to be dissatisfied with the results; but if one begins well beforehand, and devotes the time to it that is due to an undertaking, the results of which are to last for a life time, and for many years to come are to be a source of pleasure, or its opposite, to not only himself but his neighbors and the stranger who passes by, there will be no difficulty in finding both deciduous and evergreen trees and shrubs exactly suited to his place, however small or large it may be. In the article in November, we mentioned some of the most desirable small growing evergreens. In looking about our own grounds to see what evergreens, after ten years planting, seem to us the most serviceable for small places, we find two of the Norway Spruces to possess most excellent qualities. In nurseries, where evergreens are raised from the seed by thousands, or millions each year, an occasional seedling will be found, which is so different



THE CONICAL NORWAY SPRUCE.

logues give some 20 named varieties; some of these, like monsters among domestic animals, should have been squelched at birth; but among them are forms, which for certain uses are far superior to the usual one. The variety called *Gregoriana*, or Gregory's Spruce, was a shapely little tree when just out 10 years ago; it is not now so tall as one's head, and a model of sturdy vigor, it being very dense with branches, upon which the leaves are smaller than in the ordinary form, and of a somewhat bluish green. There is nothing dwarfed or stunted in its appearance, but it manages to keep obligingly small, and grow but slowly. Another variety of the Norway is called *Conica*, or the Conical Spruce. This we have not had so long as the other, and can not compare the two for rapidity—or rather slowness—of growth. This, of which we give an engraving, has remarkably upright branches, while those of Gregory's Spruce are spreading; its leaves are longer, and of a lively yellowish green. Messrs. Saml. B. Parsons & Sons, Kissena Nurseries, Flushing, (L. I.) N. Y., from whom ours was procured, state that it is one of the most popular of all the small evergreens. We are not surprised that this should be so, as its exceedingly neat and compact habit, and its pleasing color, joined to a very dwarf stature, all make it a desirable small evergreen for small places. Those who care for oddities will be gratified with the variety of the Norway Spruce known as *pendula*, or Weeping Norway Spruce. Our specimen has been growing some 6 or 7 years, and does not appear to have increased much in

light. It has apparently no aspirations, all its tendencies being earthward; no sooner does a shoot start than with a sort of arboreal depravity, it at once turns downwards, and while in this manner it builds a broad fountain-like mass of branches, its upward growth is very slow. While we can not commend this, if one is to set a very few trees, it may well find a place in a collection of moderate size. This also came from Messrs. Parsons. There is one matter concerning the care of small evergreens, which, though it has been frequently stated, may be repeated here, with emphasis. When there is a heavy fall of snow, these are quite surrounded, and almost, if not quite, covered. The surface of the snow, softened by the sun's heat, and by rains, freezes with every cold spell; and all the while the mass is gradually settling. If the surface snow entangles and freezes around the branches of these trees, while the mass at the same time settles, the result will be to disfigure the tree by a severe distortion of the branches, or what is worse, to tear them off altogether. The only safe method is to remove the snow from around them after every heavy fall, a matter of little trouble, if done at once.

The Thick-leaved Elm, *Ulmus Crassifolia*.

It is now more than twenty-five years since, in exploring that part of Western Texas, that lies between the San Antonio and the Pecos Rivers, that we came across a remarkable Elm. The habit of the tree was more that of an Oak than an Elm, while its dense foliage was made up of leaves so small and thick, and so unlike those of our Northern Elms, that, had we not found the fruit, we might have been in doubt as to the kind of tree. Upon examining the specimens, after our return home, we found that Nuttall, in his continuation of "Michaux's Sylva," had figured and described it (in 1842) as the Opaque-leaved Elm, *Ulmus opaca*, forgetting (as he not infrequently did), that he had already, (in 1834), described the same tree, in his "Flora of Arkansas Territory, as *Ulmus crassifolia*—the Thick-leaved Elm, which is the oldest name, and must be adopted. Nuttall first found the tree upon the upper waters of the Red River, where, in a richer soil than that of Western Texas, it attained a medium size, and afforded a dense and especially acceptable shade. Different persons recognize trees by very different characters. The lumber man, who is among trees, as a general thing, in the winter only, learns to distinguish them by the bark, and this he will do with an accuracy which surprises those who are accustomed to look to other characters. The landscape gardener studies the outline that trees make against the sky, the angle their branches form with the main stem or trunk, and the character of the spray. The botanist is too apt to disregard the points observed by those skilled in woodcraft, and those who study the picturesque effects of trees, as these characters are only learned by long familiarity with the objects, and can not be definitely recorded in descriptions in such a manner that others may make use of them. While the botanist notices any striking peculiarity of the habit, or the bark of the tree, his main dependence in identifying species is upon the leaves and the flowers, and on the fruit in general. While we have often been astonished at the accuracy with which woodmen will tell a tree by its bark, we have in turn as much surprised them by telling the tree from the mere form of the leaf, a character which they do not take into consideration. With this digression, we will say that the leaves of this thick-leaved Elm, are, including their short stalks, only about an inch in length, and half that in breadth, varying somewhat in size in trees in different localities; they are unequal, *i. e.*, with one half larger than the other; very deep green, somewhat shining, and roughish to the touch on the upper surface, and paler below; the margins serrate with blunt teeth. When very young, and but partly developed, the leaves are thickly covered with down. The very small flowers are in clusters of three or four in the axils of the leaves, appearing late in the season, and the small, deeply-notched, and downy fruit ripening in autumn. This

species is mentioned here as one concerning which it is desirable to know more, our interest in it being increased by the fact that a small specimen in our grounds, near New York, much to our surprise, endured the past rather severe winter without injury. Should this not prove to be an accidentally exceptional case, and the tree survive the present winter, there will be good reason to hope that it may be safely added to our collections, as it may, no doubt, to those of England and Southern Europe. By this time, settlements must have extended to the localities of this tree, and we shall be glad to learn from those who live where it grows as to the nature and uses of its timber, and how nearly, in its native localities, it comes to be an evergreen. The engraving is from a herbarium specimen, showing a small twig, with leaves and fruit of the natural size.

Tropæolum as Greenhouse and Window Plants.

Tropæolum is a South American genus of very showy plants, most of which are climbers. The best known member of it is the common garden Nasturtium, or "Sturton," (*Tropæolum majus*), often cultivated for its showy flowers, and for its pungent fruit, to be used for pickling. Other species, especially those with tuberous roots, are only suited for culture under glass, and are so unlike the coarse garden annual in foliage and flower, that one would hardly recognize them at first sight as belonging to the same genus. The "bulbs," or more properly tubers, vary in size from that of a boy's marble up to that of an English walnut, and are offered by the seedsmen with their assortment of autumn bulbs. The leading species are the Three-colored, *Tropæolum tricolorum*, the Blue, *T. azureum*, Jarratt's, *T. Jarrattii*, and perhaps one or two others. The tubers should be potted as early as they can be procured, by September if possible, in light rich soil, and provided with a trellis, or some kind of a frame, usually of wire, or of rattan, to run upon. A very pretty effect is produced by using a very twiggy branch, or the top of a young tree, of some kind, instead of a regular frame. In the greenhouse they may be trained to a wire fixed for the purpose along the rafters, for the freer growing kinds. When the shoots first start from the tubers, they are exceedingly slender, but little larger than a common horse-hair, and before the leaves develop, they make so little show that they may be broken unless care is taken. Several shoots usually start from the tuber, and should be trained out separately to the support, at once, else in a few days they will entwine around one another, and become a tangled mass, from which it is almost impossible to extricate them. When once fairly started, the vines grow rapidly, and may be helped with a little weak liquid manure. They do not begin to flower until the support is well covered with foliage, but if potted early, they will be gay with flowers from March until May. The engraving, given on the preceding page, is of the natural size, from a spray of the Three-colored *Tropæolum*, the flowers of which are scarlet and yellow, tipped with black in unusual and brilliant contrast. They will flower well in a temperature of 50°, and with care will make satisfactory window plants, but they are very sensitive to cold, and any thing like frost will kill them outright. When done flowering, the foliage should be kept growing to mature the tubers, and when this shows signs of fading, water should be withheld, and the tubers allowed to dry off. They may be kept in the pots in the dry earth until time to repot the next season.

A Wonderful Prairie Flower, "The Cockatelle."

BY PETER HENDERSON

The vender of that wonderful novelty, the "Cockatelle Flower," is "Comanche George," as he calls himself. George was one of these terrible fellows, a Texan scout. To dispel all doubts on this point, the garb of the plains is so necessary to

him, that even in the streets of New York, while selling his seeds of the "Cockatelle," his hunting shirt and boots, and that leathern belt, so suggestive of bowie-knives and revolvers, still clothe the stalwart form of "Comanche George." In one of his many wanderings he discovered, on the banks of the Brazos, the "Cockatelle," a flower at once so surprisingly beautiful as to subdue the savage instincts of this man of war, and convert him at once into a peaceful seedsman. He describes this wonderful flower as vieing in colors with any rainbow, the foliage simply grand, and the odor, surpassing that of the Rose and Jessamine combined, is wafted over the plains for leagues. After securing the seeds, he made straight for Washington, and gave the officials of the Botanic Garden the first offer, but through jealousy, or something else, they would not purchase, so George wended his way through Baltimore to Philadelphia, and easily found more appreciative customers. When he reached New York the demand had been so great, that he thought of raising the price from 5 seeds for 25c., to 1 seed for 25c.—so he said—as he wished every man and every woman to be able to feast their eyes (and noses too) on this Texan wonder.

We saw him some time in March, and either because our quarters were scarce that day, or we, too, were jealous of this formidable rival, we failed to secure seeds. But we have seen the products of these seeds in the possession of several of our friends, during the summer. There must have been something wrong in cultivation or climate, for the wonderful flower of the Texas prairies, when transferred to our colder region, is not much of a flower at all, and as for odor—but that is so much a matter of taste (or smell) that it may be as well not to express an opinion on that. In fact, "Comanche George's" flower of rainbow hues, turns out to be nothing more and nothing less than common garden *Okra*, or *Gumbo*. Not a few of the scout's customers are ready to assert that he was no scout at all, never saw Texas; and that he had had a heavy contract with some one for *Okra* seed. When last heard of, he was working his way Eastward, slighting no town of any size worth "doing." He no doubt will turn up in some other section with a fresh supply of "Cockatelle" seeds for the coming spring, and your Eastern readers should be on their guard. It is hardly to be wondered at, that this plausible scamp found so many victims, when we know that not a few "professionals" were unfortunate enough to exhibit to friends plants of the "Cockatelle," the seeds of which they had purchased of "Comanche George." I doubt if there are any fields for humbug so varied as those provided for the amateur horticulturist. Year after year, as regularly as spring comes, the swindlers, now known as the "Blue Rose Men," plant themselves in the most prominent streets of nearly every city of sufficient size in the country, and openly sell what the merest tyro ought to know are impossibilities in fruit and flowers. They don't even go to the trouble to vary the names of their frauds, but the same colored plates of Blue Moss Roses, Blue Dahlias, and Blue Gladiolus, and of strawberries, (growing on trees), as large as turnips, do duty just as they did 10 years ago. A new crop of victims comes up every season, and like gudgeons, swallow these most thinly baited hooks. The other day, on Broadway, at Trinity Church, an old colored man had taken up a position against the fence; at his feet lay coiled a few dozen of spiny briars. I stopped and asked him what they were, and the price, "Dems Rosy bushes—de only Rosy bush dat am fragrum, and dat bloom all de time—jes 25 cents a piece."—"Where did you get them?"—"From de boss, and he get dem from Yourup." The "Rosy Bushes" that "the boss" had imported, were not at all "Rosy," but just the common "Green Brier" or "Cat Brier," *Smilax rotundifolia*, to be found in almost every thicket, or along nearly every neglected fence row in the country, North and South. Some industrious scamp had dug these from the Jersey swamps, and had given to this simple son of Africa to sell as "Rosy bushes." ["Comanche George" has at last come to grief, he has fallen into the hands of an interviewer, and, in an unguarded hour, told who were his patrons, and

his opinions of them. As a result a large number of ladies and gentlemen—people who “think no small beer” of themselves, find their names catalogued in a Sunday paper as victims of this swindle, the amounts out of which they were fleeced, and the rascal’s accounts of their eagerness to be humbugged. Probably these people will recollect what we have often told them, that really valuable plants are never introduced in any such loose way. If a traveling vender or other unknown person offers a seed or plant of any kind as a novelty, be sure that here is a first-rate chance to be humbugged. ED.]

Too Much Shade for Health.

The business of planting shade trees is not perhaps overdone. Ornamental trees, the Maples, Elms, Oaks, Tulip trees, and others, certainly add much to the beauty of our village streets, and we should hardly know how to spare the Lilacs, the Wistarias, the Honeysuckles, the Hawthorns, the Wigelias, and Rhododendrons, and other flowering shrubs, that thrive in the yards, and cluster around our windows. There is no occasion yet, especially in the newer villages, for the tree-planting societies to disband. Country roads still sadly lack ornament and shade. But the tree-planters should certainly have their attention called to the abuse of shade. Such an unusually wet season as this in the East, showers falling almost every week, all through the early summer, intensifies the evils of our over-shaded streets. In many of those old towns which are considered the glory of New England, the trees have been planted so near together, and so close to the house, that sunlight is almost wholly excluded from the dwelling, except at mid-day. Trees are not only on all sides of the house, but they have been planted so thickly, that the branches interlace, and no sunlight falls beneath. Elms that require 60 to 100 feet space, for the full development of their branches, are planted within 20 feet of each other, and Maples, that need nearly as much room, are allowed but 10 or 12 feet. It is gloomy and damp under such trees until mid-day, and the moisture steals into the darkened sleeping-rooms of the house. The carpets and furniture grow moldy, and the people who dwell in these over-shaded houses, grow thin and pale, dyspeptic and consumptive. If New England boasts of her tree-crowned villages, she also mourns over the largest proportion of consumptives in her death-list. These villagers want more sunlight and a dryer atmosphere. The dwelling should have the full benefit of the sun, and a free circulation of the air upon every side of it. The remedy for these overcrowded streets and yards is the axe. Thin out until every tree has room for full development, and a margin of sunlight beyond. It will make handsomer trees, and healthier men. We protest against the abuse of shade.

CONNECTICUT.

Striking Cuttings in Water.

Just now some of the European horticultural journals are discussing the method of striking cuttings in water, as if it were something new. It has been in use for a long while in this country for cuttings of Oleander, Laurel, and other hard-wooded plants, and what is called the “Saucer System” of propagation, is scarcely different. In the “Saucer System” sand is used, but with so much water that it is in a state of very thin mud. The cuttings are placed in this very thickly, and exposed to full sunlight, taking care to keep up the supply of water. The French cultivators have used water for cuttings of very soft-wooded plants, such as Begonias. It is apparently much better for summer work than for winter, and in this, as in the saucer propagation, it is necessary to give the plants full sun-light. They find that bottles of clear glass are better than those of colored glass, and with soft-wooded cuttings, but a very small portion of the lower end is immersed, a precaution necessary to prevent decay. This is a method which may afford the amateur much amusement, and may be useful to those who only wish to make a cutting or two, but the professional florist will hardly care to bother with it.

THE HOUSEHOLD.

For other Household Items see “Basket” pages.

Home Topics.

BY FAITH ROCHESTER.

Keeping a Diary.

I find it of some advantage to keep a small diary each year. A journal is a different thing. In the latter you may spread yourself to your heart’s content, but a diary is for business. It should be kept up pretty closely, or be written in every evening, if one would avail himself of all its advantages. Anything will do for a diary, which gives clean space for writing, but a little pocket-book, made for the purpose, with spaces marked for each day in the year, is best. Three years ago I had no ready-made diary when the year began, so I used a small blank book, making the dates as I wrote. But this got us into a “pretty scrape” one pleasant summer day. We called it Saturday, and Mr. R., who had been at home, working on the farm for several weeks, had determined to go back to the city, to work that paid better, (I am ashamed to say it in an *Agricultural Journal*), on that very Saturday. When a neighbor, who seldom left his daily work in the field at this season, came to the door in his clean Sunday clothes, and loitered as though quite at leisure, I said, “I wonder if Mr. J. hasn’t lost his reckoning, and taken this for Sunday.” We thought it must be so, and I related how amused my mother and I had been the year before to see my father dress himself up leisurely one Saturday morning, and sit down in the shady door-way of the same house we then lived in, to sing his Sunday-school song book through, in pleasant memory of the days gone by when he was a S. S. Superintendent, while his usual daily work was waiting quite urgently for his care. A little later I saw my neighbor’s wife, also dressed up for Sunday, and when I asked her about it, she assured me that it was Sunday. The Almanac could not help us out, but I thought my diary would. But that only confirmed my error, because I had been several days behind-hand, and in “writing-up” lately, had

Skipped a Day.

We then talked it over together, but to the other members of the family, one day had been much like another all through the last week. Suddenly we remembered an important event which I had not chronicled at all, and in slipping that in between the other days, we found ourselves in the midst of Sunday, sure enough. I believe Robinson Crusoe never lost track of the time, but I wonder how he could do so. I have had to go to my diary to help our folks to a knowledge of the time more than once, and we have even found by that we were a week behind in the days of the month.

Of course people who send children to school, or who live in the neighborhood of churches, or who have daily association with neighbors, are not likely to lose track of the days of the week or month, but if you think it ridiculous to do so in any case, you should be placed as some readers of this paper are, out of sight of neighbors or a public road, and out of convenient reach of schools and churches.

About Keeping Accounts.

I am inclined to agree with Mrs. Stowe’s Nina as to the futility of keeping accounts. It does not bring the money back after you have spent it, and I am sorry to say that my accounts seldom add up and balance properly, but the daily memoranda in my diary, of money received and spent, has saved me from loss more than once. When I write regularly in a journal, I note down all letters received and sent, and I turn to the diary to see whether it is time for a reasonable expectation of an answer to a business letter. I examine it, too, to learn how long a sack of flour, or a cord of wood, has lasted, in trying to make calculations about family expenses; also to learn how long since the last rainy or sunny day; and if one of the children should get sick, I should wish to trace back, through the various entries in my diary, the different steps of the disease from the prolonged expo-

sure to cold or dampness and the taking cold, or the over-dose of sweet things and resulting stomach ache, to the actual sickness, in order that I might learn how to avoid such trouble in future. The diary is an important ally of the memory.

Beginning Poor.

A young woman asks whether I think it would be safe and prudent for her to marry “John,” when they have less than three hundred dollars to start with. That depends. I decline to give personal advice in this case, though the person asking has my hearty interest and sympathy. The subject will allow of some general remarks.

What position in life do John and Mary aspire to fill? What are their social aims and ambitions? If they must begin as though they were rich, while they are really poor, of course it is not prudent to marry. But there are thousands of happy families where a start was made with less than a hundred dollars. Michelet says that two can live cheaper than one, and a young lawyer once demonstrated to me how he was able to save more from his income since his marriage, while living far more comfortably and happily, than before. But his wife knew how to make the most of everything, and they had sufficient means at first to set up house-keeping in a pleasant and comfortable manner.

Two people who love each other can begin house-keeping with a very small outlay of money, if they are so disposed. They need only to furnish one room, and that with little outlay of money. A cook-stove, a bed, a table, two or three chairs, a few dishes, a lamp, a wash-basin, a tub, and wash-board. These are about all the articles of furniture actually necessary to begin with. Then the

Saving must Begin.

and out of the savings there can soon be purchased other useful household articles, until the establishment is comfortably equipped. I know from experience that carpets and curtains (other than newspapers—and perhaps I should have set down a good newspaper among essential articles), are not among the necessities of life in all circumstances. When they must be had, cheap ones can be found to answer the requirements of utility and beauty. If a young couple, with very small means, begin in this way, and carefully keep out of debt, paying for everything as they buy it, they will find a satisfaction in their purchases which they could never have in the possession of treasures balanced by debt. In order to save anything from the weekly or monthly earnings, there must be careful economy about food and clothing. The most nourishment from the least money must be the aim, and every leak should be stopped, or all outlay for that which brings no real advantage in return.

Beginning Arithmetic.

Some mothers who teach their children at home, find it more difficult to bring them along properly in arithmetic, than in any other branch. This has been the case with me. Geography, with a globe and maps, almost teaches itself. A mother, with a mind at leisure, can manage the arithmetic well enough, I suppose. After the little one has learned to count, it can be taught to put numbers together, either by using a regular Abacus or counting frame, or by using beans, peas, or marks on a slate. The mother can make for it little problems of the simplest character, leading it along gradually through addition, subtraction, multiplication, and division; teaching it to read and write numbers, and preparing it to use a book intelligently when it has learned to read well enough. I have never found a book that suited my needs until a friend sent me lately a “Table Book and Introductory Arithmetic, by Lydia Nash.” This has not a word too much, and it has quite enough. It was compiled by a practical teacher to aid other teachers in drilling their pupils in the simple rules of arithmetic. There is nothing to commit to memory except the simple tables of the four fundamental rules, and no one need require a child to repeat a table, if disposed to teach addition, subtraction, and even multiplication, in a more practical manner. But here the tables are arranged in the best manner, each one followed by a “skipping-around” table. After the tables, we have reading and

writing of numbers, and then simple, graded examples in addition, subtraction, multiplication, and division. There are no rules and no explanations, because the young child, for whom this introductory book is designed, is supposed to depend upon its teacher for oral instruction and explanation. Here is simply something to *do*, in the doing of which the learning comes of itself. This is the modern theory of learning rules: learn to *do* a thing, and then tell us how you did it, or how it can be done. It was the old way to make the child first painfully commit the rule to memory, whose sense it could hardly see, until it afterwards learned how to apply the rule by familiarity with examples. I don't know where the book mentioned above can be obtained, but mothers who see and like the idea, can act upon the same theory by using any book, and omitting rules and explanations (or not requiring that they be committed to memory, but teaching *how*, and explaining *why*, in her own way), or without using any book at all.

The Spoiled Bread.

I thought the fire was going down, and I would not need any more for two hours; so I set the bread-pan in the oven, with the batch of kneaded dough in it, and went up-stairs to work. I was detained longer than I expected, and when I came back to the kitchen, there was a hot fire (kindled up just before I set the pan in the oven, it seems,) and I supposed that my bread was spoiled. I pulled off the upper half of it upon my floured-kneading board, and picked out the remainder, which was half baked, as carefully as I could, and set the rough bits on a baking-pan back into the hot oven. At noon, when the children came hungry from school, they pounced upon these crusty brown-baked bits as something quite rare and good, either alone or in milk, and so not any of that batch of bread was wasted.

Simple Dessert Dishes.

Almost everybody knows "Brown Betty," made with chopped apples and bread crumbs. "How came it to be called "Brown Betty?"—I know how "Joanna" came to be called, so. My great aunt Joanna told mother how to make it, a plain, but good cake, made with some milk, without eggs, and from being called "Aunt Joanna's cake," it came to be "Joanna." I turned aside right here to ask my mother, now sojourning with me, if she remembered how to make

JOANNA CAKE.—Here is the rule: One cup of lopped milk, one cup of sugar, one tablespoonful of butter, half teaspoonful of soda. Flavor with nutmeg, or spice to suit, and use flour to make a rather stiff batter.

This cake would do well to use for a dessert, which may be made of any plain cake, with canned berries. Split open the warm cake, and spread upon each half canned or stewed berries of any kind, laying one layer of cake, when spread, above the other. A plain sponge cake is very nice treated in this way, and makes a rich dessert when served with sweetened cream.

A common cream short-cake, split as for a strawberry short-cake, and dressed with sweetened cream, makes a delicious dessert.

To come back to "Brown Betty." This can be made with almost any kind of fruit. Not long ago, a recipe for Brown Betty, made with pie-plant, appeared in the Basket items of the *American Agriculturist*. The idea is to place alternate layers of crumbed bread (battered or not) and fruit in a pudding dish, and bake or steam the whole. The other day, I used up a quantity of dried peach sauce, which had become rather tiresome, by making a dessert, which gave satisfaction, in the shape of

DRIED PEACH BROWN BETTY.—A layer of peach sauce in the bottom of the pudding-dish, a layer of bread crumbs about an inch thick, sprinkled with sugar; another layer of stewed peaches, and a second layer of bread crumbs and sugar, with enough thin, sweet cream poured over the top to wet the upper layer of crumbs. Bake from half an hour to an hour, according to the heat of the oven. This was eaten with good milk, but sweetened cream would not have spoiled it. A similar plain everyday dessert can be made with dried apple sauce.

A Hanging Basket for a Cool Room.

Mrs. S. J. J., Bergen Co., N. J., wishes to know how to fill her hanging basket with plants suited to a cool room; the house is moderately warmed throughout, and while the room in which she would place the basket is seldom very warm, it never gets cool enough to freeze. It is quite late



BASKET WITH IVY AND HARDY FERNS.

in the season to start baskets of this kind. We might tell our correspondent to send it to a florist's to be filled, but the chances are that most florist's plants, being accustomed to heat, would fail to flourish in a cool room. If Mrs. J. can get from a florist a couple of strong vigorous plants of European Ivy, the rest will not be difficult. Most florists keep Ivy in pots, as there is considerable demand for it during the holidays, and we notice that it is generally on sale at all seasons in the stores of the city florists. But you can, no doubt, get the plants at the florist nearest to you. For the rest, you had better go to the woods. It will not be difficult to find in almost any rocky ravine, or wooded hillside, our largest Evergreen fern, the Evergreen Shield fern, *Aspidium acrostichoides*, a vigorous species, a foot or more high; take up some clumps of this. You will be very likely to find in the same woods the *Mitchella*, or Partridge-berry, also called One-berry, as its fruit is produced by two flowers. This is a capital plant for a cool place. Some sheets of moss, such as is found at the lower part of trees, will be useful. Of course, you can not get these if the ground is frozen, any more than you can soil from the woods, with which (and some sand) to fill the basket. If lucky enough to secure all the materials, set a clump of the fern in the centre, an Ivy opposite each half of the handle, and bits of the Partridge-berry around the edges, so that the vine will hang over the sides of the basket. Probably each Ivy plant will have several stems; train one or more of these around the handle of the basket, and the others to the outside of the basket itself, loosely tying the stems in place with coarse thread. When all are planted, and the surface of the earth leveled, then place on the sheets of moss to quite cover the soil. The moss can be torn or cut into bits to fill spaces between the larger pieces, and all made to look like an entire sheet of green. Press the moss down firmly, to be sure that it will be in close contact with the earth. The engraving shows a basket we filled with just these materials some while ago, and we never had one, even when furnished with expensive exotics, that gave us more satisfaction. These are all shade-loving plants, and do perfectly well in a cool room, where there is but little direct sunlight. Of course, the soil must be watered when it needs it, and the Ivy will be all the healthier if its leaves are

sponged occasionally, to free them from dust, and if possible a good showering should now and then be given to the whole basket.

A Home-made Work-Table and Basket.

In former volumes we have given quite a number of illustrations of articles of furniture to be made from available materials, and we now add one more to the list—a combined work-table and work-basket, from a design sent some time ago. This home-made furniture, if well put together, will be quite as serviceable as that purchased from the cabinet-maker and upholsterer, and may be made at a cost quite insignificant as compared with the other. In the matter of appearance, there is a cosy home-like look about these home-made articles, that is much more in keeping with the surroundings of those in moderate circumstances, than any showily upholstered work of the shops. Those of our readers who find themselves, as many of them do, at a distance from cities, can, by the exercise of a little mechanical tact, provide themselves with articles of use and comfort, which they could not otherwise obtain. A barrel, and a few pieces of lumber, will furnish the materials for the frame-work of this table. The heads of the barrel answer for the base and the cover; these being in two or three pieces, are fastened together by two strips nailed on in the manner of cleats. To the center of one of these fasten an upright standard of a convenient height, as in figure 1; this may be done by putting several strong nails through the base, and it would add greatly to its strength to place two or four short braces between the base and the standard; these are not shown in the engraving.

The strongest and best hoop of the barrel is selected, and four braces, of staves split in halves, or other material, are attached at half way up the standard, one end of each being firmly nailed to the standard, and the other end to the hoop. The frame being finished, as in figure 1, it is to be covered with such material as may be

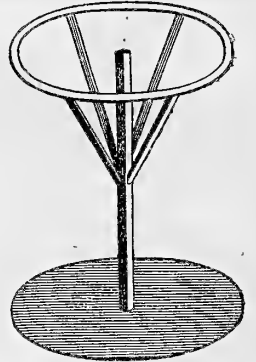


Fig. 1.—FRAME OF TABLE.

desired, or may be at hand. Glazed cambric of some bright color, covered with Swiss muslin, laid on in plaits, makes a very pretty covering; but the matter of covering is one that admits of a wide variety, and most house-keepers will be inclined to utilize

some material at hand. The covering should be put on with small tacks, and left full enough to allow of its being gathered in at the middle, by means of a cord or band, as in figure 2. The second barrel-head is to be covered on both sides with the material, and may be fastened by a hinge to one of the braces, or left loose. A ruffle or a plaited strip should be put around the cover, and around the top and bottom, to hide the edges of the covering material,

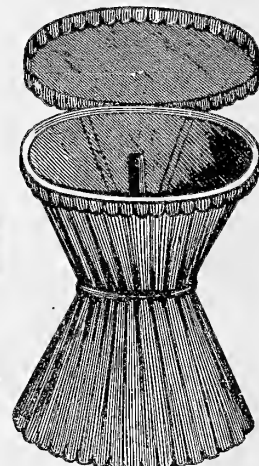


Fig. 2.—TABLE COMPLETE.

and give a finish to the whole. If the covering is not sewed together, but the edges merely lapped over where they meet, the lower part of the table may be used to hold slippers or other articles, which may be put in through the opening thus left. If desired, the table may have casters

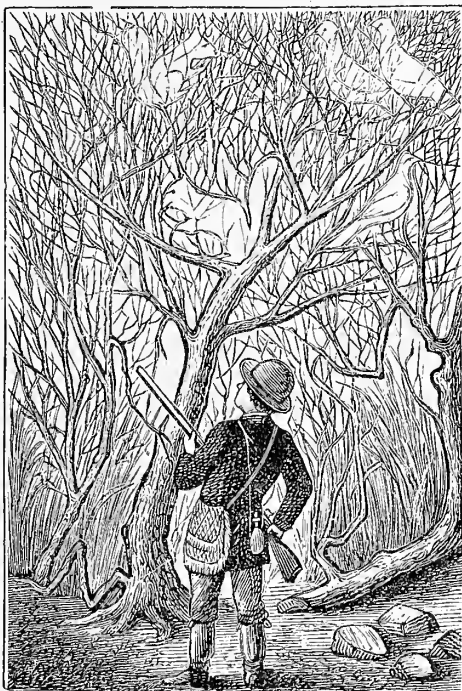
attached to the bottom. The upper half may be fitted up to suit the convenience. A single shallow bag of strong material, with an opening to allow the standard to pass through, may be tacked to the hoop, and form one large receptacle, or it may be divided into several compartments. The underside of the cover may be furnished with several pockets to hold articles, and its capacity as a work-stand may be still more enlarged by attaching a row of small pockets around the upper edge of the stand, to hold spools and other materials.

Diphtheria—What to Do.

Believing that much of what is called domestic medicine—frequent and ill-advised dosing—to do much more harm than good, the *American Agriculturist* has, as a general rule, kept its columns free from the many recipes sent as “the best thing in the world,” and “sure cures” for various diseases. While we are opposed to frequent medication for every little ailing, we think that every mother should understand the general laws of health, and sufficient of diseases to know when it is safe for her to apply some simple remedy, and when the case is sufficiently grave to make it necessary to call in medical aid at once. In many cases the success of the physician depends upon his being called at once, while it is too often the case that he is not sent for until all the medical knowledge of the parents and neighbors is exhausted, and the patient still grows worse. There is no disease in which immediate aid is more imperatively demanded than diphtheria, which has been, the past season, and is now, in some neighborhoods, and even whole townships, especially frequent, and often very malignant and fatal. In one family, within a mile or two of the writer's residence, every one of a family of four promising children has been taken away within about a week. Diphtheria is eminently contagious, and every precaution should be taken to prevent it being communicated from one to another. When the disease prevails in a locality, children should be kept as much as possible from contact with others, and as persons in whom it has not manifested itself, are able to communicate the disease, all foudling of children, and “kissing the baby” by callers, should be avoided. Before there is any difficulty of breathing, there is a constant pain at the sides of the throat, and this is accompanied by very fetid breath, and the appearance of whitish spots upon the sides of the throat, (faucet), the back part of the throat, or the roof of the mouth, is an indication sufficiently strong to call for medical examination at once. The remedies employed by physicians are various, but none is so generally used, and none have been found, if used in time, more reliable than the *Chlorate of Potash*. While we do not advise any parent to assume the responsibility of treating so grave a disease as diphtheria, we may suggest how they can essentially aid the physician, and this is of especial importance to those who live at a long distance from the doctor, and where many hours must pass before he can arrive, for in this disease hours are of great importance. Chlorate of Potash, to be had at all drug stores, is a salt in small, white, scale-like crystals, which are not very soluble in water. It may be kept on hand in the form of crystals, or when the disease is prevalent in the neighborhood, it may be well to keep a solution ready for use. It takes about 16 parts of cold water to dissolve one part of the Chlorate, and it is to be used in a saturated solution. To prepare this, it is only necessary to add to water more of the Chlorate than it will dissolve. Half an ounce put into a four-ounce vial of water, will be about twice as much as the water will dissolve. As long as any remains undissolved, the solution is known to be saturated—i. e., the water can take up no more. If the ordinary water is hard, use rain water. Upon the appearance of symptoms which seem to indicate diphtheria, a dose of this may be given every hour, a teaspoonful for a child three years and older, and half a teaspoonful to those under three. It is to be given undiluted, and without any sweetening or other admixture, as its

taste is not very unpleasant. Drink of any kind should not be given for some minutes after a dose, as it is desirable that the solution should remain in contact with the surfaces of the throat and mouth as long as possible. Children old enough to gargle the throat, may take the dose every hour, and every half hour use the same as a gargle. This is only intended to aid the physician's treatment, and is advised only for cases in which some hours must elapse before they can be attended. When the doctor comes, tell him exactly what has been done, and how many doses have been given. Those situated quite beyond the reach of medical aid, can not do better than continue the administration of the solution every hour, day and night, until the spots in the throat begin to disappear, when their frequency may be diminished to two, and later to three hours, giving all the while the most nourishing food. This advice has the sanction of the most eminent medical authorities, but we repeat, it is only to be followed until the doctor comes, and at the first appearance of diphtheria, or what seems to be that, lose no time, but *send for medical aid at once*.

BOYS & GIRLS' COLUMNS.



No. 463.—Puzzle Picture.—Master Green has gone out on a gunning expedition. He would shoot if he could see any game. You and I can see a plenty of game of various kinds, large and small, but there is more than any of you are likely to see at first sight.

The Doctor's Correspondence.

ABOUT THE MICROSCOPE.

Last month most of you no doubt saw that the Publishers had arranged for the manufacture of a Microscope, which is to be called the *American Agriculturist* Microscope, and that it can be had on very easy terms. In offering this Microscope I know that the Boys and Girls were considered quite as much as the older people, as it will prove a great source of amusement and instruction, and is put so very low that it would seem that nearly every one who really wished to have one could get it. Many will no doubt be writing to ask me about it, and I will answer them in advance, that while it may be had for a fraction of a dollar, it is quite as good as those which cost two or three dollars, but of course will not magnify like those large compound microscopes which cost \$25 to \$100 or more. I have no doubt that enough youngsters will have them to make quite a large

YOUNG MICROSCOPISTS' CLUB,

and I shall try to point out, as they come along in season, the different things that you will find it interesting to examine. But this must not be all on one side, for I expect you, on the other hand, to tell me what you find, and what you see that interests you, and that my correspondence, now quite large, will be much magnified by the Microscope. The engravings given last month show

the parts of the Microscope, but there goes with each one a sheet telling

HOW TO USE THE MICROSCOPE.

This shows how to very easily mount the little instru-

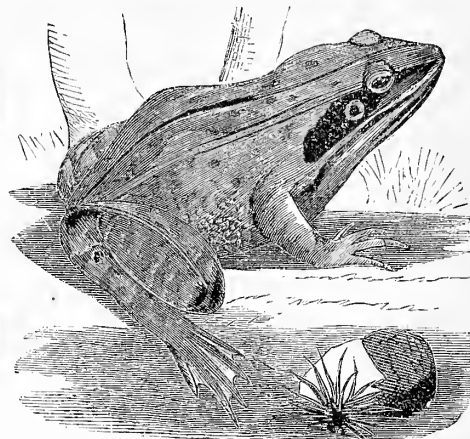


Fig. 1.—THE WOOD FROG.

ment on a base or stand, so that you can work more conveniently with it. Then it tells how you can fit up a few little tools that will be very convenient to have, and quite worth the little trouble it will be to make them. Then it points out a number of things that are to be seen, many which you can examine now, and learn to use the Microscope handily. Take it altogether, I think we start off

WITH THE NEW YEAR

with a good prospect of having an interesting time. I expect that a large lot of new comers will join our circle—but there is room for all. The more the merrier, and there is always room for more. So tell your young friends—those who do not already belong to our circle—about the *Agriculturist* and the Microscope, and let us have as large a number as possible in our “Young Microscopists Club.”

W. I. Norton, of New Jersey, whose inquiries concerning the Tree-frog, I answered some months ago, sends a

DRAWING OF A FROG.

He found the frog in the woods, and “had a friend draw a picture” of it. Now just here let me advise W. I. N., and every other boy and girl who reads this, to learn to draw. Had my young friend been taught to draw himself, he would not have been obliged to ask some one else to draw his frog. Every one who can learn to write, can learn to draw. All will not draw equally well, any more than all write well, but every one of you can, with a little trouble, learn to draw sufficiently well to be of great use. This frog of W. I. N.'s friend was not a remarkable one, but it was sufficiently accurate for me to see at once what frog it was taken from. I may have something to say

ABOUT LEARNING TO DRAW

at another time. As to this frog, I could see that it was the Wood Frog (*Rana sylvestris* of naturalists), and my correspondent is right in saying that he never saw it on trees, or near water. It is found in thick woods, preferring oak-woods, from Michigan to South Carolina. It is reddish-brown above, and has a dark-brown patch around the eye, and extending considerably back of it. It is a very active little fellow, and makes long leaps, and you must be very lively if you would catch it, as it has a way of hiding among the leaves that may surprise you. If my friend had watched, he would have found that this frog, like all other frogs and toads, no matter where they may live at other times, go to the water at breeding time, usually in early spring. As the young of all these animals is passed in the

“TADPOLE OR POLLYWOG STATE,”

they all go to the water to deposit their eggs, and then leave them, and the young which hatch from them, to shift for themselves.

CARD-BOARD WORK.

E. M. I know that making toys from card-board is a very pleasing occupation, and that making houses of card-board is even very useful, as one may learn much about architecture in making an exact model of a building. If a young person in trying his hand at one of these only learns how necessary it is to be exact, and to always work from measure, it will be a useful lesson. Some persons are so careless that they can not cut out the stuff for a simple box, and have it all come together right, while the material for such a building as the New York Post-Office was all worked out, a stone at a time, in the quarry in Maine; and when the pieces were brought to New York, they were found to go together exactly, the measure having been given with great accuracy, and the workmen having observed it. One trouble about

CARD-BOARD TOYS

is the room the patterns take up, and space is so scarce with us that we like to use it to the best advantage. However, I will give you one example now, which will show the general plan on which such patterns are made, and if in other months I can find room, I may give others. The pattern, figure 2, is that of a little card-board sleigh.

BY CARD-BOARD,

we mean any stiff paper, or thin paste-board, such as cards are printed on. You may often find boxes in which handkerchiefs, gloves, and other small wares are packed,

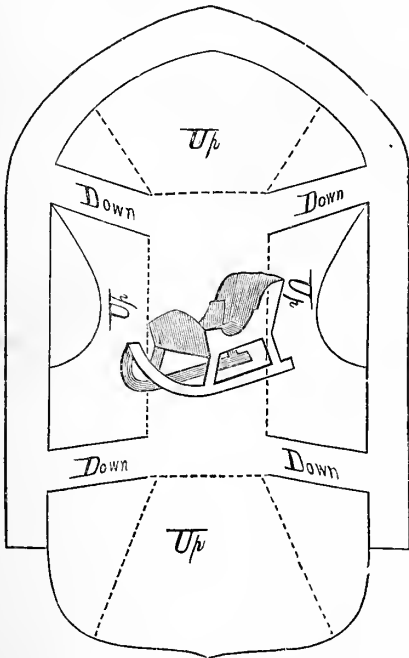


Fig. 2.—A CARD-BOARD SLEIGH.

and which are of no use to the shopkeepers when empty, that will furnish good material, and may be had for little or nothing. For nice work, sheets may be bought at the stationers. The first step is to

TRANSFER THE PATTERN TO THE CARD-BOARD,

and it may be useful to know how to do this for other things. You will observe that the pattern has entire lines, and dotted lines; wherever the lines are unbroken, the card-board is to be cut; where the dotted lines occur the card-board is only to be bent, and the directions "up" and "down" show which way. Now to transfer this pattern to the card-board. If you have some very thin note, or other paper, through which, when it is laid upon the pattern, you can see the lines with sufficient distinctness to follow them with a pencil, that will answer. If your paper is too thick, tracing paper would be useful, but as you do not wish to go to any needless expense, you can convert common paper into

A TRACING PAPER

that will answer the purpose. Take the thinnest paper you have, lay it on a clean piece of brown paper—if you use newspaper the ink will come off—and with a clean cloth apply kerosene until it is well oiled. Then with another clean cloth, remove all the kerosene that will come off by wiping. The paper should not have so much kerosene on it as to soil the hands or the page upon which it is laid. Place this paper over the pattern, and the lines will show distinctly. Keeping it in place carefully, or holding it by pins if you can not keep it steady without, take a soft lead pencil and copy the lines—whole lines when whole in the pattern, and dotted if those in the pattern are dotted. Having made this tracing, you wish to transfer it to the card-board. In this case, as the pattern is symmetrical, *i. e.*, both halves alike, all you have to do is to turn over your tracing, placing it *marked side down*, upon your card-board, and then with a lead pencil, or any smooth point, go over the lines upon the wrong side. This pressure on the lines will cause the pencil-mark—or a part of it, to adhere to the card-board, and make a faint outline, but one that may be easily followed, and when you have done this, you can go over the lines on the card-board and make them stronger by the use of the pencil, and thus get an exact copy of the pattern as it appears on the page. This pattern is a regular one, with both halves alike, but if it were one in which the sides were unlike, this would reverse matters and make what should be on the right side, appear on the left and vice versa. So to

TRANSFER AN IRREGULAR PATTERN,

and have it exactly like the original, you must work a little differently. Take the Wood Frog here shown. If you were to follow the directions already given, the frog,

which now looks towards the right, would look towards the left. To avoid this, you make your tracing as before. Then turn the paper over, and go over the lines on the opposite side with a soft pencil. Then place this on your card-board, or whatever the pattern is to be transferred to, with the right side, or that on which the tracing was first made, uppermost. Then go over the lines with a hard pencil or smooth point once more, and you will transfer the lines which were put upon the other side of the tracing, to your card-board or paper, and this figure will be an exact representation of the one copied—as to right and left. Transferring a tracing may be done still more easily and satisfactorily by the use of what is called

TRANSFER OR CARBON PAPER,

such as is used in the manifold letter-writers. This is easily made, though it is smutty work. All that is required is a soft, thin paper, some lamp-black, lard, or castor oil, a plenty of soft rags, and some old newspapers. Mix the lamp-black with castor oil or lard, (in cold weather softened by placing in a warm room for a while), to a thick paste. Lay a sheet of paper upon some old newspapers, and by means of a roll of rag, smear it evenly with the lamp-black paste, rubbing it in well. Then with other soft rags, wipe off all that will come off, and then serve the other side of the paper in the same manner. When properly done, this will not soil the hands, or white paper upon which it is laid, but if you draw a line, or write upon it with a pencil or other hard point, the lamp-black will be transferred at those places to the paper below. This paper is much used for copying letters, and for transferring embroidery and other patterns. But in describing the methods of transferring tracing, we have got far away from our

LITTLE SLEIGH.

The rest is plain enough; the outside lines may be cut with scissors, but the inside lines are cut much more neatly with a pen-knife, the card resting on a flat smooth board. It will be seen that the back of the sleigh and the front or dasher, are intended to lap upon the side pieces; they may be fastened there by a little gum, or by a stitch put through the parts.

SEEING THROUGH A BRICK.

"H. T. W.," Bergen Co., N. J. This is one of the oldest optical tricks, and is quite a thing of the past. The last we heard of it, the deception was put to a good use. At the great Sanitary Fair, held in New York in 1832, to raise funds to supply comforts to wounded soldiers, a lady had found one of these "Penetrating Telescopes," as they were called, and large numbers were willing to pay a dollar into the funds of the Commission, for the chance to see "through a brick." The trick de-

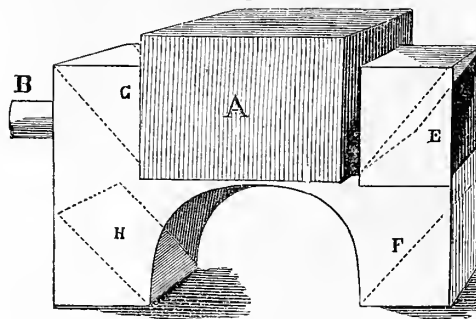


Fig. 3.—A PENETRATING TELESCOPE.

pends upon the well-known laws of the reflection of light, and can be explained by the diagram, fig. 3, which shows one form of the "telescope." One looking in at B sees whatever may be beyond the opposite opening, E, notwithstanding that the brick, A, may apparently be in the way. The trick is performed by

CONCEALED MIRRORS,

or bits of looking-glass, placed at the proper angle. Thus, E being turned toward an object, its image will be reflected from that mirror down to another mirror, F; from F across to H, and thence up to C, where it is seen by the eye placed at B. The instrument is made in other forms that are better calculated to deceive than this, but this shows the principle upon which all are made.

Aunt Sue's Puzzle-Box.

PL.

Het sulo hatt fresfus si grestnor hant eth losu ath icesjore.

ADDITION OF FRACTION.

1. Take two letters from a word signifying array;
2. Take two from another signifying a fruit;
3. Take two from a word, meaning—to disclose;
4. Take two from another, meaning—forefetter;
5. Two from another, meaning—probably;
6. Two from a word, meaning—to make plain;

Add the letters together and you will see what I am trying to do.

TRY AGAIN.

NUMERICAL ENIGMA.

1. I am composed of eighty letters:

My 12, 23, 49,—77, 44, 61,—18, 3, 23, 34, 38,—48, 62, 76,—6, 26, 32, 33—5, 64,—29, 70, 46, is a Proverb of truth.

My 67, 2, 20, 27, 37,—40, 63, 14—43, 19, 49, 11, 16, 32, 1,—78, 1,—65, 8, 71, 66, 17, 22, 70, 4, is a Proverb of caution.

My 28,—1, 45, 33, 42, 13,—24, 73, 32, 20, 21, 69, 75,—10, 54,—45, 50, 2, 9, 25, 29, 48, 14, 39, 8, 40,—15, 63,—18, 35, 36,—33, 66, 56, 7, is a Proverb of honesty.

My 80, 60, 28, 55, 21,—23, 72,—31,—69, 19, 79, 32, 30,—5, 62,—15, 35, 51,—1, 59, 49,—38, 53,—6, 44, 78, 23, 33, 52,—41, 2, is a Proverb of education.

My 59,—41, 8, 63, 58,—21, 73, 47, 57,—10, 27,—74, 20, 34, 19, 68, 22,—37, 70,—12, 13,—69, 35, 78, 42, 16, 29,—43, 38, 28, 40,—41, 3, 26, 31, 46,—17, 25, 69, 41, 36, 54, is a Proverb of reputation.

My whole is a Proverb of Solomon.

2. I am composed of 47 letters:

My 38, 30, 22, 23, 22, is the name of a goddess.

My 20, 8, 44, 34, is a river in Africa.

My 3, 14, 37, is a kind of fish.

My 32, 11, 2, 18, 7, we have in spring.

My 40, 33, 36, 47, is an article of apparel.

My 4, 23, 1, is a vehicle.

My 5, 28, 10, is a kind of dwelling.

My 45, 9, 18, 12, 34, 42, is a city in New York.

My 13, 19, 23, is what some people drink.

My 39, 46, 26, is a woman's name.

My 24, 30, 41, 5, 21, 31, may generally be seen on the dinner-table.

My 43, 44, 16, 6, 27, 3, 21, may often be seen on a dress.

My 15, 2, 25, 8, 29, is a strait.

My 17, 2, 20, is much used in summer.

My whole embodies the names of a god and goddess, with some information about them.

IDA S. TERRY.

3. I am composed of 10 letters:

My 1, 8, is to move forward.

My 10, 5, is a boy's nickname.

My 6, 3, 4, is to do evil.

My 3, 2, 8, 9, is very strong.

My 5, 8, 7, is something very small.

My whole is a very useful implement on a farm.

E. S. D.

4. I am composed of 12 letters:

My 3, 8, 10, is an animal.

My 11, 2, 3, 11, 1, 12, is a kind of corn.

My 5, 4, 9, 1, 2, is a musical instrument.

My 7, 1, 4, 1, 7, 7, 1, 6, is a city in North America.

My whole is a river in North America.

J. II. NOBLE.

ALPHABETICAL ARITHMETIC.

H O P E) G L A D L A N D : G R O G

H O P E

N N L A A

N D A D E

G E D L N

G D D G P

G P O N D

H O P E

L P E R

AGGIE SANXAT.

CONUNDRUM.

Why did the Colossus of Rhodes become quite small in a thunder-storm?

CROSS-WORD.

My first is in shadow but not in gloom,
My next is in grave but not in tomb,
My third is in sink but not in fall,
My fourth is in high but not in tall,
My fifth is in mind but not in heed,
My sixth is in plant but not in reed,
My seventh is in game but not in play,
My eighth is in tell but not in say,
My ninth is in look but not in see,
My tenth is in drink but not in tea,
My whole is the name of a principal city
You will find it with ease if sufficiently witty.

NAME.

TRANSPOSITIONS.

(Fill the blanks with one word transposed four times.)
That horse with the queer — has as — a — as I ever saw. The driver exclaimed, "—!"

S. F. T.

HIDDEN RIVERS.

1. There was a hippopotamus at the show.
2. I like a fat ham, especially if is large.
3. Be obedient to your parents and teachers.
4. Ten hundred men were slain.
5. Oh! I only sent you there to stay awhile.
6. One has a lop-car like a rabbit.

JOHN W. WHEATLEY.

SQUARE PUZZLE.

Take seven christian names of seven letters each, and place them one below the other, so that another name of seven letters shall be revealed in the diagonal letters, beginning at the upper left-hand corner and finishing at the right lower.

DIAMOND PUZZLE.

1. A vowel. 2. A heavenly body, which forms the center of a system of orbs. 3. The American Ostrich. 4. A name. 5. The act of being contemptuous. 6. To prosecute. 7. One-fourth of five.

The center letters, perpendicular and horizontal, form a name with which we are all familiar. K. P. N.

RHOMBOD PUZZLE.

Across.

1. A bird. 2. An animal. 3. Incurring punishment. 4. A twist of thread. 5. A native of India.

Downwards.

1. A consonant. 2. A preposition. 3. A covering. 4. Animals. 5. Liquors. 6. A value. 7. To cut short. 8. None. 9. One of many. NUTMEG.

ANSWERS TO PUZZLES IN THE NOVEMBER NUMBER.

METAGRAM.—Stream—from which may be made the words Sam, east, steam, team, mare, ram, tame, rat, tea, arm, sea, tar, mast, ease, mate, star, (Mars), rest, stare.

TRANSPOSED AVIARY.—1. Goldfinch. 2. Humming-bird. 3. King-fisher. 4. Nightingale. 5. Starling. 6. Pigeon. 7. Falcon. 8. Swallow. 9. Pheasant. 10. Partridge.

NUMERICAL ENIGMA.—Bestirring, man, while yet the day is clear.

NINE CONCEALED FRUITS.—Orange, lemon, pear, peach, currant, plum, prune, grape, apple.

Send communications intended for Aunt Sue, to Box 111, P. O., Brooklyn, N. Y., and not to 245 Broadway.

Aunt Sue's Chats.

MRS. S. S. D.—A very pretty edging, for the purposes you name, may be made with braid and crochet-work. Get Sutor's feather-edged braid, No. 3 (see fig. 1), (it is sold by the piece of 12 yds., for six cents; proportionally cheaper in larger quantities), Clark's cotton No. 40, and a fine steel crochet-needle. Fasten the cotton into the fourth or fifth loop from the end of the braid (to allow for raveling). Make a chain of six stitches, then put your needle into the next loop but one, with short-crochet. Now make a chain of five stitches, and put your needle through the next loop but one with short-



Fig. 1.—FEATHER-EDGED BRAID.

crochet. Again a chain of five stitches, and your needle through the next loop but one. Now take up the next eight loops of the braid with short-crochet, and you will have reached the point illustrated in the last scallop of figure 2. The eight loops just finished fill up the inside of the lower edge of the scallop. Now make a chain of two stitches and join it in the third stitch (just drawing the thread through) of the lowest chain of five; then a chain of two stitches, and turn back into the second loop (from the eight short-crochet stitches) of the braid; then a chain of two, and back into the third stitch of the next chain of five; a chain of two, and into the next loop but one; then you make a chain of three, and draw your thread through the center of the chain of six; a chain of three, and into the next loop but one. This

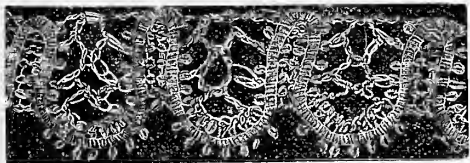


Fig. 2.—WIDE EDGING.

completes the scallop. For the commencement of the next scallop (and to join the two) put your crochet-needle through the loop next to the one which is directly underneath the stitch you have on your hook, on the lower side of the braid; turn it over on the wrong side, and double the braid so as to bring the loops (between the two scallops) opposite to each other, then draw your thread through two loops at a time (the two loops which are opposite to each other), leaving the stitches all on the needle, until you come to the loop above the eight short-crochet stitches inside the lower part of the scallop;

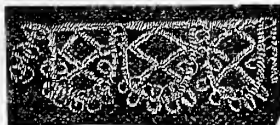


Fig. 3.—NARROW EDGING.

then draw your thread through the first stitch, on the hook, then through two and through two until you come to the end of your stitches. Now turn it over on the right side, flatten it out, and just at the top of the joining there will be one little loop of the braid standing up by itself; through that you draw your thread and com-

plete another scallop, beginning with the chain of six as before described. The illustrations may enable you to see through what my explanation has left obscure. To make a narrower edging, like figure 3, leave out the second "chain of five stitches"; to make wider edging, increase your chains of five, and take up more loops on the inside of the scallops.

JESSIE W.—You will find a description of toilet-set (pincushion, mats, catch-alls, card-case, hair-pin box, etc.) in the June No., 1876, of the *American Agriculturist*, p. 226.

"W."—The symbolic meaning of precious stones in Germany is:

Amethyst.....	Control of the passions.
Aqua marine.....	Misfortune.
Agate.....	Long life and health.
Bloodstone.....	Courage and discretion.
Chrysolite.....	Preservation from folly.
Diamond.....	Innocence.
Emerald.....	Happiness.
Garnet.....	Fidelity to promises.
Opal.....	Hope.
Ruby.....	Oblivion and grief.
Sapphire.....	Repentance.
Sardonyx.....	Conjugal fidelity.
Topaz.....	Friendship.
Turquoise.....	Success.

For the initials "C. L. P.," I can think of nothing better than *coral*, *lapis lazuli*, and *pearl*. It would certainly be a peculiar combination, and "C. L. P." would be very sure that you had the ring made especially for her.

CHARLIE.—Yes; "alligator skins" are tanned, and used for boots and shoes. Nearly 20,000 are tanned yearly (the sides and underneath parts, not the backs). They are stripped off, packed in brine, and sent North, from Louisiana and Florida, to be tanned. It takes from six to eight months to prepare them for use. The alligators are sometimes 12, and rarely 15 feet long.

"S. M. F."—An old newspaper, slightly dampened, is the very best thing with which to clean a looking-glass.

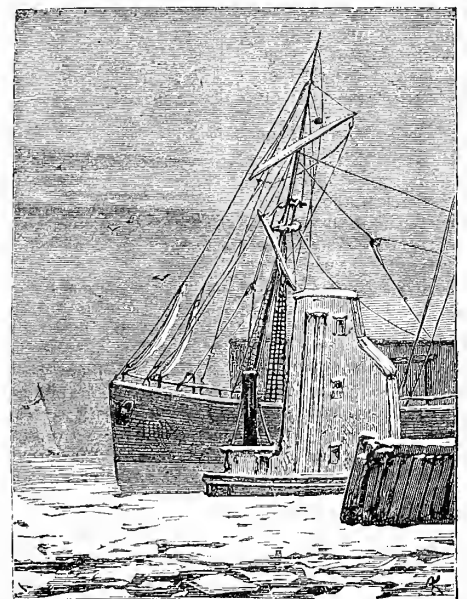
"A. M. M.," asks me how to make a "shell-frame." The question is somewhat indefinite, but I suppose she means "how to make a frame of shells." I never had much of a fancy for shell-work, it is so perishable; the shells are always falling off, and getting lost, leaving an ugly gap somewhere. But if I had plenty of pretty shells, and wanted a frame of the kind, I should procure a suitable wooden frame for the purpose; then I should cut a paper the exact size of the frame. On the paper, I should arrange the shells in some tasteful uniform or multiform manner, until it was completely covered. Then I should smear the frame with a strong, stiff glue (a small portion at a time), and transfer the shells from the paper to the frame, one at a time, retaining the position (originally arranged on the paper) as nearly as possible. [Sometimes the frame is covered with a thin layer of putty, and the shells imbedded in that.—ED.]

Thanks for letters, puzzles, etc., to M. Marchand, Charlie F. B., Ida C. C., Augustus J. W., S. G. S., J. R. H., Mary Gold, Sallie, and others, whose favors I hope to answer at some future time.

Where Does the Wheat Go?

Every boy or girl who lives in the grain growing States takes an interest in the wheat crop. They see wheat every where, they hear wheat talked of, and they know that the wheat is sold that sugar, shoes, and many other things may be bought with the money. The girls and the quite young boys, if they take no part in the work of raising the crop, can admire it, and they early learn to know that the fields so bright and green in fall and spring are wheat fields. Later, what a beautiful sight it is, when the tall grain is moved by the summer breezes, and it rolls in waves like those of the sea! Later still, the green gives way to the rich tint that shows that the grain is ripe, and soon you hear the click of the reapers, and then come the hurry and the buzz of the thrashing time. All these make the wheat crop a most interesting one, even to the young people who can not work at it. But the older boys are sure to have a hand in the crop at some time, if it is only to drive the horses or otherwise help at the thrashing machine. It must be a dull kind of boy who can keep quiet when thrashing is going on, where all is so active and every one is doing something with all his might. The horses are pulling, the drivers shouting—or if an engine is used, the steam puffing—the machine going with a tremendous racket; even the air seems full of chaff, and straw, and shonts, and sounds. Where so much is going on we say—a boy that is any sort of a boy—is sure to catch the spirit, and he does something. When at the thrashing machine, do you ever think what all this bustle and rush is for—what does this crowd of horses or steam, of cogs and cranks, of men and boys, all this noise and dust—what does it all accomplish? Go to the delivery spout of the machine, and what do you see? A little stream of small yellowish or brownish grains—the wheat running into a bag. But this hurry-skurry of thrashing is only the end of a long line of operations. Months ago there were strong

horses at work with plows, harrows, drills, and rollers. There was the farmer's anxiety about snow, and freezing, and thawing, he was watching for insects and smut. Then came reapers and binders, and hawking and stacking—all this work running through months, and all that this little stream of wheat might quietly run from the side of this very noisy machine. Is it worth all this trouble and all this labor to get just those grains. What are they—what are they good for that they should be produced at such a cost—that machines and animals, that men with their hands and with their thoughts, should all combine to produce these little grains of wheat. If we were by, we might play the conjurer of the old fairy tale, and say: "If you would see that stream of wheat as it really is, take this magic glass and look through it. This is a wonderful glass; it is called 'The Imagination.' Every boy, and every girl has one, but they do not always know it, and some who do know it and try to use the glass, look through the wrong end and see things as they are not. But look now at the wheat and what do you see in the stream?"—"Steamships and watches. A Senator making a speech and a cook making a pie; fine laces and silks, and gunny bags and ropes; a thief going to prison, a preacher going to his pulpit; books—books, and more books; newspapers and pictures; a microscope and a locomotive, washing machines and sewing machines, such a lot; looms, reapers and—there, take your glass, I am tired—there is too much—there is everything."—"Wheat is bread. That 'bread is the staff of life,' is a saying so true that many persons think it is from the Scriptures. Wheat is the main support of life in all civilized nations, and life shows itself in innumerable forms, a few of which we have supposed our youngster saw by the aid of 'The Imagination.' It is no improper use of the imagination to see in the wheat those things which but for the wheat could hardly be possible. In writing thus we would show the farmer's boy that in raising wheat, he is doing something more than getting so much a bushel for it. He is helping on the world's progress; he is furnishing food to the muscles and the brains of the world, and these muscles and brains in turn help him with better plows and thrashers, and send him books and papers to nourish his brain in return. We would show him that while we are all engaged in doing the world's work, the farmer's part is one of the most important and honorable. You can see that this little stream of wheat, insignificant though it looks, is really important. Each grain is full of power, quiet now, but capable of being awakened. In a stream of gunpowder, each grain can exert an immense power, but that is exercised suddenly and dangerously—while the power in the grain of wheat, is exerted gradually, it becomes bread, and bread feeds the muscles and the brains, and its final power is shown in the work these do, which (though sometimes turned to evil) is generally for the good of mankind. These precious grains are really worth all the trouble, all the hard work, and all the anxious thought through the months between seed time and harvest, until amid all the hurly burly of thrashing, they can run in a stream, quiet, but



STEAM ELEVATOR FOR LOADING SHIPS.

how full of concealed power, from the outlet of the thrasher. Where does the wheat go then? "To the mill," you will say. That which the farmer sends himself to the mill—even that used in his own neighborhood, is but a small part of his whole crop. The rest finally gets to the mill, but what a long journey much of it takes. Between the field on your farm and the thrashing machine at your barn, to the mill, is often thousands

of miles. If you were to trace the journey of a bushel of wheat from your farm to the table where it is eaten as bread, it might take you a long distance, and through many strange scenes. You see the sacks of wheat loaded upon the wagon, you know that they go to the nearest railroad station, or it may be to a shipping point on the river or lake, and then your knowledge of it ends. The East has been these many years sending its people to the West, and now the West sends its grain Eastward. It comes by railroad and canal, and at last reaches the coast. It may be made into flour in New York, Philadelphia, or Baltimore, and make its last appearance on the table of a Fifth Avenue palace or a Five Points hovl. But most of it must keep moving, and go on and on across the wide Atlantic before it finds a mill. The steamers sailing from New York to Europe on Saturday, a few weeks ago, took 263,000 bushels of wheat on that day, and every Wednesday and Saturday similarly large quantities are taken away. Some of you wheat raising boys can calculate how many farms like yours it will take to make up the quantity taken by the steamers on that one day. These steamers often have to unload and take in their return cargo in three or four days, and you may be sure it is busy times with them; the work goes on day and night, and while the imported cargo is going out at one end, the export cargo goes in at the other end of the enormous ship. As you well know, it would be very slow work to shovel up all this grain and carry it on board in baskets, so steam is called into use. The wheat—possibly some of that from your own farm, is brought to the side of the ship in canal boats or barges, and from there it is loaded upon the steamship by means of a "Steam Elevator." The engraving shows how one of these looks by the side of a ship, and its outside appearance; it is not rare to see two or three of these at work at one steamer. These elevators have an endless band, to which pockets or buckets are attached, and this being moved by a steam engine, a continuous row of pockets, full of wheat, is going up to the highest point of the elevator; there they pass over a wheel, the wheat falls out and a row of empty pockets is going down on the other side. The result is a large stream of wheat, running from the elevator, which may be directed by means of spouts to any part of the hold of the ship. At last the great steamer gets her load, not only of wheat, but of flour, pork, beef, and many other of the products of our farms, even to the eggs from your barn-yard, and starts at the very hour—with all the promptness of a ferry-boat—on her way across the ocean. These grains of wheat, how they must be tossed and rubbed, and as the steamer goes plunging on and on, every day and hour carrying it farther and farther from the farm where it grew. At length after its long journey by land and sea it gets—the destination of all wheat—to mill. Where does it at last appear as bread? Who can tell? It may be in the scantily furnished home of some workman at Manchester, or in the castle of some nobleman; it may be at the table of a London clerk's boarding-house, or possibly at that of the Prince of Wales at Sandingham, or of the Queen herself at Windsor. All, workman, nobleman, clerk, Prince, or Queen, must have bread—they are all equal in this—bread is a universal want, and our fertile farms, our industrious farmers, and you, wide awake industrious boy, as you help whether by working in the field or at the thrashing machine, all are contributing to answer the world's great cry for bread.

A Distinguished Visitor from Africa, P. Pongo, Esq.

Probably there has not been in many years an arrival in Europe which caused so much excitement among a certain class as that of the subject of our sketch. The Emperors, Princes, Mayors, and other high dignitaries, made a great fuss, a while ago, over the visit of the Shah of Persia. More recently our own Ex-President General Grant has received, not only from the officials, but what is much better, from the people in general, a magnificent welcome. But it is doubtful if the arrival of the Eastern

the party, who took the animal to Europe, and finally sold it to the managers of the Aquarium at Berlin for \$5,000. It then was no longer a mere animal—a young gorilla, but Mr. Pongo, and under that name his fame extended all over the civilized world. Never was a young Royal Highness more carefully watched than was Pongo. What he did when awake, how he slept, what he had for breakfast, what for dinner, and what he did between meals were closely studied, faithfully recorded, and the intelligence sent all over the world. Berlin had Pongo, and London was Pongo-less, and this would never do; London endured this for two years, and at last sent to Berlin

and had the young Gorilla brought over. Once in London poor Pongo had a hard time of it, he was written up in all the daily papers, and pictured in all the illustrated weeklies; the scientific men came and they measured his bones and counted his ribs, they talked about his "facial angle," and his "occipital ridge." At last Pongo went back to Berlin and—soon died. Whether London fog, or London science, was too much for Pongo, we probably shall never know. He went back to Berlin and died very suddenly, and all that is left of him is his many portraits, one of the best of which, from a London journal called "Our Little Folks" is given here. When this picture was taken, Pongo was supposed to be about three-and-a-half years old, he was between three-and-a-half and four feet high, and weighed forty-three pounds. Though covered with hair, and going on all fours, Pongo was looked upon as being more like a human being than any ape or other animal ever before known, but it only needs a look at his portrait, where he naturally uses his foot as a hand, to see that he is very far from a human being, even the lowest and most degraded of which we have any knowledge. He showed considerable intelligence, but not more than is exhibited by some dogs; and though he had been taught to sit at the table and eat very much what his keeper ate, and even to take his food sometimes with a spoon, he showed his natural tastes by preferring to sit upon the floor or to swing upon a trapeze, which was provided for him. Poor Pongo



PORTRAIT OF PONGO—THE YOUNG GORILLA.

Monarch, or a Western Ex-President, was ever viewed with so much interest, as has the arrival of an individual from Africa, with no title at all, by a few men of science. Monarchs and ex-Presidents were after all but men, while one individual from Africa was much less than a man, and that very fact made him all the more interesting. Travelers in Africa had long ago given accounts of wonderful creatures who were found there, creatures as large as the largest man, and with strength to do wonderful things, such as crushing a gun-barrel in their teeth, and carrying off the natives in their arms. Later, skulls and skeletons, and stuffed skins of this creature—known as the Gorilla, were sent first to this country, and later to Europe, and these only increased the desire to know more about the animal. It was stated by travelers that the ferocity of these creatures was unbounded, and that even when taken quite young it was impossible to tame them. Several young gorillas were shipped to Europe, but they somehow died, or otherwise disappeared before they reached port, and this was given as additional evidence that the animals could not be tamed. An African captured a very young Gorilla, and sold it to a Portuguese gentleman living in Africa, for a small sum. A Prussian Exploring Expedition happening to stop at the village where the Portuguese lived, that gentleman gladly gave the young Gorilla to one of the members of

died before he could teach us much about his people—that is, the full-grown gorillas of the African forests.

According to the accounts of travelers, they grow to be five-and-a-half feet, and some say over six feet high. The skeleton is in many respects more like the human skeleton than that of any other animal; the bones of its limbs are wonderfully large and strong, and while its head is large, that part of the skull which holds the brain is very small. Indeed the brain of the largest gorilla is not half the size of that of the lowest savages yet known. The gorillas are said to go in troops of four females and one male; the two sexes being somewhat different in color, the hair on the males being grayish, and that of the females, blackish. The gorilla is found principally in the western part of Africa, in the forests north and south of the equator. The males are exceedingly savage, and do not hesitate to attack a man if he comes in the way. They are said to come towards their enemy, beating their breasts and roaring terribly, and to be most dangerous. Yet as human-like as gorillas seem in some respects, several of the African tribes eat its flesh, while other tribes will not eat the flesh of this or the chimpanzee or other apes, because they are so much like man. Pongo has proved so interesting, that no doubt other gorillas will be taken from their homes and taught the ways of civilized life, and we hope may not share Pongo's fate.

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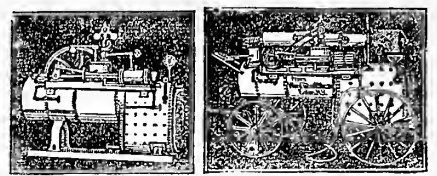
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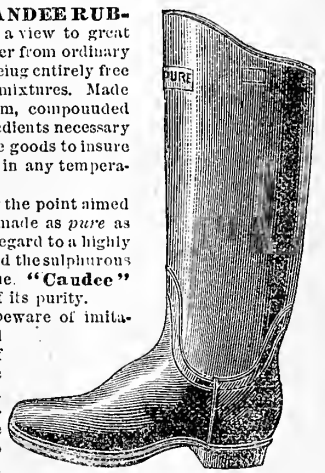
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(See Advertisement, page 37.)

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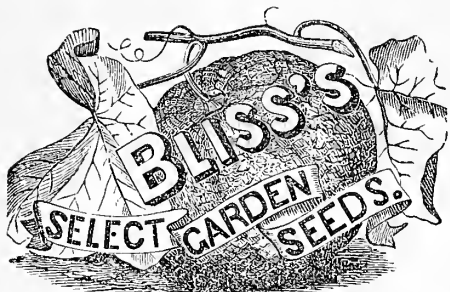
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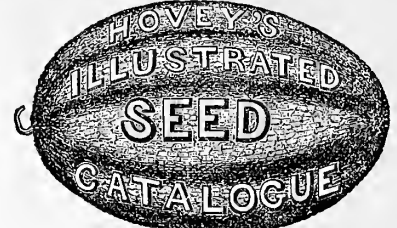
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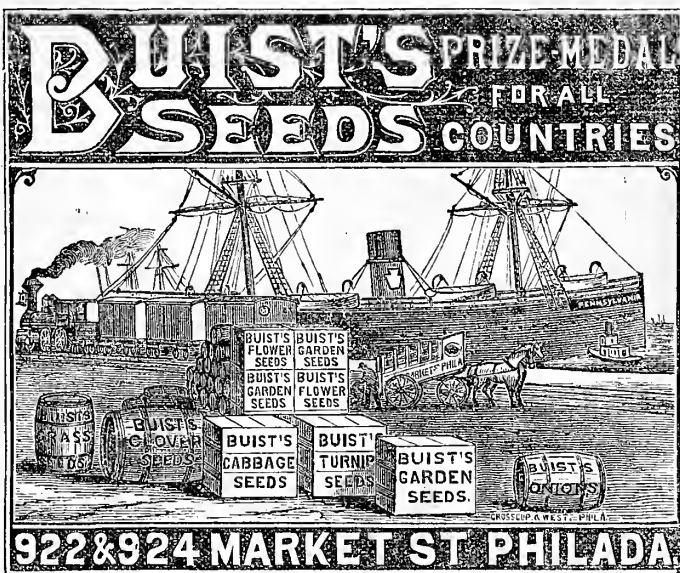
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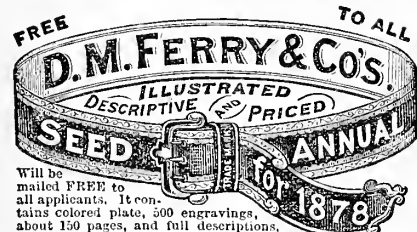
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[In the following table is given the price of each article, and the number of subscribers required to get it free, at the regular rates of \$1.60 a year, and also (with a part of the premiums), at the club rates of \$1.10 a year, postage included, which is prepaid in all cases by the Publishers.]

TABLE of Premiums and Terms
For Volume 37—(1878).
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No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at or above \$1.60	Number of Subscribers required at or above \$1.10
1	Tea Set (Middletown Plate Co.)	\$50.00	66	130
2	Ice Pitcher (do. do. do.)	\$13.00	20	130
3	Cake Basket (do. do. do.)	\$7.50	16	63
4	Cake Basket (do. do. do.)	\$10.00	18	100
5	Casters (do. do. do.)	\$5.25	13	55
6	Casters (do. do. do.)	\$7.50	16	63
7	Casters (do. do. do.)	\$10.00	18	100
8	Butter Cooler (do. do. do.)	\$6.50	15	60
9	Pickle Jar and Fork (do.)	\$5.00	12	50
10	Syrup Cup with plate (do.)	\$6.25	15	60
11	Child's Cup (do.)	\$3.50	8	35
12	Twelve Teaspoons (Meriden Cutlery Co.)	\$7.25	16	63
13	One Dozen Tablespoons (do. do.)	\$14.50	22	147
14	One Dozen Table Forks (do. do.)	\$14.50	22	147
15	Ladies' Folding Pocket Scissors (do.)	\$1.50	4	50
16	Child's Knife, Fork & Spoon (do.)	\$3.00	4	50
17	French Cook's Knife, Fork, & Steel (do.)	\$3.75	9	37
18	Case of Scissors (U.S. Steel Shear Co.)	\$4.00	10	40
19	Portable Writing Desk, (C. W. F. Dare)	\$1.75	4	...
20	Walnut Work Box, (do.)	\$1.25	4	...
21	Buck-Saw for Boys, (do.)	\$1.00	2	...
22	Little Girl's Wash Set, (do.)	\$1.00	3	...
23	Sled, (do.)	\$2.00	15	...
24	Spring Horse, (do.)	\$1.00	12	...
25	Boy's Wagon (C. W. F. Dare)	\$5.00	12	50
26	Boy's Tool Chest, (E. I. Horsman)	\$1.00	8	...
27	Boy's Larger Tool Chest (do.)	\$2.50	7	25
28	Boy's Larger Tool Chest (do.)	\$5.00	12	50
29	Pat. Magic Bellhead Pencil (Ludden & Taylor)	\$1.50	4	...
30	Ladies' Magic Charm Pencil (do. do.)	\$2.00	5	20
31	Gents' Magic Charm Pencil (do. do.)	\$2.75	7	25
32	Gold Pen, Telescope Case (do. do.)	\$2.50	7	25
33	Gold Pen and Pencil (Elegant (do. do.))	\$5.50	13	55
34	Knives and Forks (Patterson Bros.)	\$14.75	22	147
35	Knives and Forks (do. do.)	\$18.50	28	185
36	Carver and Fork (do. do.)	\$3.75	9	37
37	Pocket Knife (Meriden Cutlery Co.)	\$1.50	4	...
38	Pocket Knife (do. do.)	\$2.00	5	20
39	Pocket Knife (do. do.)	\$2.75	7	25
40	Ladies' Pocket Knife (do. do.)	\$3.50	8	35
41	Multum in Parvo Knife (do. do.)	\$3.00	8	35
42	Crandaill's "John Gilpin"	\$1.00	3	...
43	Crandaill's "District School"	\$1.00	3	...
44	Crandaill's "Masquerade Blocks"	\$1.00	3	...
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52	Household Press, (W. A. Boardman)	\$2.00	5	20
53	Aquaput, (Force Pump), (W. & B. Douglas, Middletown, Conn.)	\$9.00	17	90
54	Self-adjusting Gold-plate Watch Key, (J. S. Birch)	\$1.00	3	...
55	Pocket Tool Holder (Miller & Fells Co.)	\$50.00	625	...
56	Piano Solenoid Lock (Steinway & Son)	\$12.00	19	120
57	W. S. Blunt's "Universal Force Pump"	\$12.00	19	120
58	Silver Watch (American Watch Co.)	\$30.00	44	...
59	Bracket Saw (Miller's Falls Man'g Co.)	\$1.25	4	...
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61	Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)	\$2.75	7	27
62	Abbott Pocket Microscope (L. G. Abbott)	\$1.50	12	50
63	Cahoon's Broadcast Seeder	\$1.00	3	...
64	Moore's Floral Set (Moore Man'g Co.)	\$1.00	3	...
65	Garden Seeds & Flower Bulbs (select)	\$2.00	5	20
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68	Double Barreled Breech-loading Gun	\$50.00	66	...
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70	Shot Gun, breech-loader, (do. do.)	\$2.00	10	...
71	Creedmore Long Range Rifle No. 1 (do.)	\$100.00	110	...
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74	Hunting & Target Rifle (Remington)	\$22.00	34	...
75	Vest Pocket Pistol (Remington)	\$3.75	9	37
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78	Climax Apple Corer & Slicer (do.)	\$1.00	3	...
79	Family Cherry Stoner (do.)	\$1.00	3	...
80	Boy State Apple Parer & Slicer (do.)	\$1.50	4	...
81	"Saratoaga" Potato Peeler & Slicer (do.)	\$1.00	3	...
82	Sewing Machine (Remington)	\$50.00	66	...
83	Family Scales (Fairbanks & Co.)	\$14.00	21	140
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102	A Choice of Good Books. (See Description, p. 408.)			

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ORANGE JUDD COMPANY, Publishers, 245 Broadway, N. Y.
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The full Descriptions and Illustrations of the Premiums, with various Notes and Explanations, were published in 8 extra pages of our October number, which can not be repeated for want of space. Any one not having that number, can have one mailed, post-paid, for 10 cents; or a Premium Sheet only, will be mailed to any address without charge.

PREMIUM
Explanatory Notes.
N. B.

Read and carefully Note the following Items: The Table, on page 401, tells the name and cash price of each article, and (in last column but one), gives the number of names sent in at the regular price of \$1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is \$1.10 each, but only a part of the premiums come under this head. Some persons quickly raise large clubs by taking all the names at \$1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.) (a) All subscribers sent by one person count, though from several different Post-offices. But... (b) Tell us with each name or list of names sent, that it is for a premium.... (c) Send the names as fast as obtained, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next July, to complete any list, but every premium desired will be sent as soon as earned and ordered.... (d) Send the exact money with each list of names, so that there may be no confusion of money accounts.... (e) Old and new subscribers all count in premium clubs, but a portion at least should be new names; it is partly to get these that we offer premiums to canvassers.... (f) One or two Specimen Numbers, etc., will be supplied free, as needed by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they are expensive, and should be used carefully and economically, and where they will tell. Other specimen numbers will be sent, post-paid, to canvassers only, for 10 cents each. The price to others is 15 cents.... (g) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at our risk; otherwise it is not.

Premium Articles for Sale.
It often happens that persons, who have not time to secure these valuable and useful premium articles by raising clubs of subscribers, are desirous of purchasing one or more of them, and wish us to procure or select them. For the accommodation of such, we will supply and send most of these premiums for cash, at the prices in the Descriptive List, and prepaid or otherwise, as stated.

Interesting Announcement!
125,000 MICROSCOPES.

Genuine, Well Made, serviceable, highly useful as well as interesting Instruments. A good source of instruction and amusement. Three Fine Lenses and Diaphragm—Stand with Glass Stage, Clips, Glass plates and Cell—Uses Reflected and Transmitted Light, or Opaque and Transparent Objects—Seven Different Powers—Magnifies 6 to 25 Diameters, and 36 to 625 Areas—Conveniently arranged for Practical Use—Not moulded glass, but carefully ground and thoroughly made Lenses.

ONE FOR
Every Subscriber
TO THE
American Agriculturist.

We have a very pleasant announcement to make. It has been customary of late years for many journals to annually present their readers with a Chromo, and this journal has done its part in sending out beautiful pictures that now adorn hundreds of thousands of homes. We have for months been looking earnestly for some other Souvenir, some Keepsake, to send to our readers, that would be not only interesting, but really and eminently useful to all, and WE HAVE FOUND IT!

After examining many things, it occurred to us that one of the most desirable, interesting, and practically useful things would be some convenient form of the Microscope, if a good one could be had within the limits of price, etc. A Microscope is really valuable to Farmers—to detect, distinguish, and aid in remedying diseases on plants and animals, whether from insects, decay, or smut, mildew, lice, scab, etc.; to detect adulteration in seeds, and their degree of goodness or badness, the proportion of fertile and infertile seed; also adulteration in fertilizers, ground bone, etc.; to examine wounds and bruises, extract slivers from the hands, etc., etc. The Microscope is equally useful to Gardeners, Florists, Fruit-growers, etc., for most of the above purposes and for many others.

To All Classes, the Microscope is useful to detect adulterations in food, as in coffee, tea, spices, sugar, and to examine the texture and defects of many articles.

As a source of Instructive Amusement, the Microscope is exceedingly valuable to Children, to Young People, and to grown people.

Impressed with the value and desirableness of an instrument which would accomplish the above, we set about examining the various low-priced Microscopes and magnifying glasses to be found here, or imported. Two difficulties were met with. First, the cheap instruments found, were all of poor quality, and lacking some facilities in working; and, second, anything having the perfection of lens and other parts which we could commend, would cost far too much to be introduced into every family. We found no microscope costing less than \$2.75 having the principal requisites of one we desired to find—such as triple lenses, stand, adjustability to use reflected and transmitted light, etc., etc.

Next, the query came up: Is it not possible, by means of improved machinery for grinding lenses, and for making each part, and by doing this on a very large scale, to get the desired Microscope at such an exceedingly low cost that every one of our readers could have one? To this end, we entered into consultation with the

Bausch & Lomb Optical Company, the inventors and manufacturers of the Excelsior and higher grade Microscopes, and of many other optical instruments, who enthusiastically seconded and aided our efforts to the utmost of their skill and ability. A large number of experiments have been made, many forms and combinations of lens and stand, etc., have been constructed, machinery has been devised for rapid and perfect work, and as the result, we have A MOST VALUABLE MICROSCOPE, which we now place before our readers with a satisfaction that is certainly very great to us, and will doubtless be pleasing to every reader of this journal.

Description of the Microscope.

The Microscope is shown in the engravings herewith, figure 1 representing it with the lenses separated. The three Lenses (a, b, c, fig. 2) are of superior glass, carefully ground, adjusted to use separately and in combination, and each one is in a polished hard rubber setting. The lens a (Fig. 2) magnifies about 6 diameters or 36 areas or surfaces; b magnifies about 8 diameters or 64 areas; c magnifies about 10 diameters, or 100 areas; b and c, used together, magnify about 18 diameters, or 324 areas. The three used together magnify about 25 diameters, or 625 areas. Used singly, or in combined pairs, and triplet, SEVEN different magnifying powers are obtained, of from 6 to 25 diameters, or from 36 to 625 areas. It will thus be seen that by using all three lenses upon a minute object or part of an object, its surface or area will be magnified or expanded 625 times!

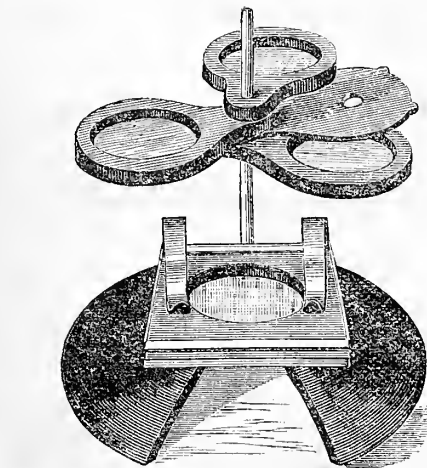


Fig. 1.—MICROSCOPE WITH LENSES SEPARATED.

A Diaphragm, d, is used to cut off distortion and render the field of observation distinct. (Full

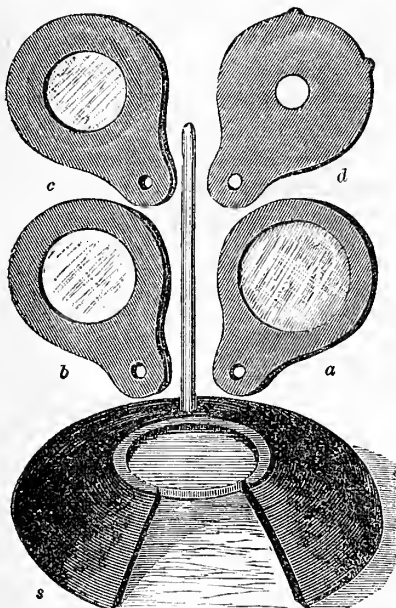


Fig. 2.—STAND—LENSES—DIAPHRAGM.

explanations of the use and mode of using each part, with many illustrations, to aid all to the proper

management of the instrument, will accompany each microscope sent out.)

The Stand (fig. 2,) has a base, s, of polished hard rubber, with an opening to admit light underneath. In the top of the base is a fixed glass stage, z, upon which to place objects to be examined. Two thin plates of glass are provided to lay over this, between which flat objects may be placed. The water-proof Cell, with a central aperture, can be placed between the glass plates, forming a cavity for liquids, for small insects, seeds, etc., etc. These plates and cell are held firmly in place by the Metallic Clips or Springs, so that the instrument can be set on the table or held in the hand for opaque objects, or be held up to the light when examining transparent or other specimens which are best seen by light passing through them.—The whole is inclosed in a neat Case or Box, with cover, for carrying and keeping. (Engravings of the different parts were given last month; and they will be found on the descriptive sheet sent with each Microscope.)

No instrument so well made, so complete and desirable, has hitherto been offered to the general public at so low a price as \$2.50. With the improvements in mode of manufacture, and the great number contracted for, this instrument will be supplied at retail for only \$1.50.

BUT to every actual subscriber to the American Agriculturist for 1878, one of these Microscopes will be supplied complete for 40 cents above the subscription price, when taken at the office or its delivery provided for. The Publishers pay for the additional cost of manufacture—a large sum in the aggregate.

(The American Agriculturist will be sent post-paid from receipt of subscription to the end of 1878. The Microscopes will be delivered as provided below.)

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Or, in clubs of 20 and upwards, \$1.10 for each subscription, and 33½¢ for each Microscope, (that is, \$1 extra for every three Microscopes, in all clubs of twenty or more.)

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(Read all the Following to avoid Mistakes.)

I. Any Subscriber for 1878, will receive the Microscope on calling or sending for it at the Office, 245 Broadway, without expense, save the small payment of 40 cents above stated, which is only a part of the actual cost of manufacture alone.

II. Whenever there is a club of subscribers at any place, one of their number can be appointed to receive the Microscopes for all, and have them come by express, making the cost of carriage but a few cents each. We will pack them safely without charge, and forward them in any way directed, on receipt of the names for whom they are to be supplied, with the small extra sum for the Microscopes stated above.

III. Until otherwise announced we will undertake to deliver them to any part of the United States, and Upper and Lower Canada, on receipt of 15 cents for each Microscope, for payment of carriage.

IV. Our subscribers in foreign countries, not named above, will need to provide for, and direct how the Microscopes shall be forwarded to them.

Any Subscriber already on our books for 1878, can have a Microscope by remitting 40 cents, (adding the 15c. more, if to be sent prepaid.)

N. B.—The Microscope is designed for all subscribers on our books for the American Agriculturist for all of 1878, no matter from whom received, on the receipt of 40 cents—the Microscopes to be taken at the office; or 55 cents, if to be sent prepaid, except to foreign countries, as named above.

To non-subscribers the Microscopes will invariably be \$1.50 each, and cost of delivery if we deliver it.



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This machine has been ON TRIAL for the past six months in every State and Territory in the Union, and the almost unanimous verdict of housekeepers is this: "Your Washer has proved a complete success." Some of the reasons why this popular verdict has been reached may be found in these facts:

The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

By purchasing a ROBBINS WASHER you can count the hard drudgery of the washboard among the things of the past.

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THE RETAIL PRICE IS ONLY \$3.50.

Sample to those desiring agencies, \$3.

In bringing the Robbins Washer before the public it becomes necessary to take into brief consideration the

ART OF CLEANSING FABRICS,

which, although so common, is yet imperfectly understood. Having had a lifelong experience in the laundry business—in connection with first-class hotels, public laundries, asylums, hospitals, &c.—we know whereof we speak. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash boilers, &c., have all done very well, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration—all of which are accomplished by the ROBBINS LITTLE WASHER.

WHAT IS IT THAT REMOVES THE DIRT?

You may ask all washerwomen and housekeepers, and your answer from nine out of ten will be: "Plenty of elbow grease;" or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No; to do that you must first dip it in the water, and then rub it in again to force water through the fabric. That is what removes dirt after being softened by the chemical action of the soap upon it.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in uniting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

is embodied all the essential points. First, we have the desired heat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a large body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual being all that is required to complete the operation.

The Washer is composed of solid galvanized iron, which will not rust or corrode. There are two sizes—the No. 1, or family size, for ordinary household use; and No. 2, or hotel size, suitable for country hotels, boarding-houses, laundries, &c.

OUR METHOD OF HANDLING.

We want agents everywhere throughout the United States, in every State, county, town, and hamlet. The retail price of No. 1 Washer is \$3.50, of No. 2 Washer, \$5. But we sell sample machines of No. 1 size at \$3; No. 2, or small hotel size, at \$4. Canvassers for this Washer can make more money with it than with anything ever before offered to the public. As, for instance, we established two agencies to test the sale of the Washer upon its merits—one in Naugatuck, Conn., and one in Providence, R. I. The former, Mr. Charles Daniels, in a town of about 2,000 inhabitants, sold by canvassing in two weeks eighty-two Washers. In the latter place Mr. James Roberts, now of Naugatuck, Conn., sold in less than three months, without canvassing or advertising outside the store, over 500 Washers. A thing never before heard of.

TO PERSONS OUT OF EMPLOYMENT

we would say, if you want to secure a paying business, now is your time. Don't wait till the best territory is taken up, but send at once for sample machine and go to work. By following instructions you can sell to nearly every family in your neighborhood. Others have done it, and there is no reason why you should not. Full directions and instructions accompany each machine. Also, special terms to agents, circulars, testimonials, &c.

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Remit by money order or registered letter to

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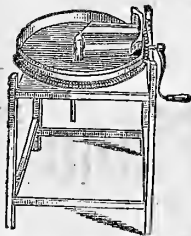
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MRS. B. SMITH, 327 Arch St. P. O. Box 1954, Phila., Pa.

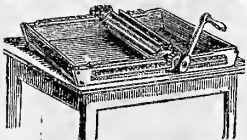


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The cheapest and best Machine in the market; no hard labor required. Try it, and see for yourself. Only \$15 for a thirty pound machine that will take all the milk out with five minutes' work.

HENDERSON & CO.,
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GOOD MEN WANTED

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A long felt Need supplied.



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GENERAL COMMISSION MERCHANTS,
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These Microscopes have been perfected under the direction of some of the ablest Microscopists of the United States, and unite stability, firmness, and compactness, with as great simplicity of construction as is compatible with the purpose for which they are intended. The Objectives have received the highest praise from every microscopist of note who has examined them. Prices moderate, ranging from \$30.00 to \$200.00. They are manufactured under the direct superintendence of Mr. E. GUNDLACH, formerly of Berlin (whose name is well known among microscopists), by the

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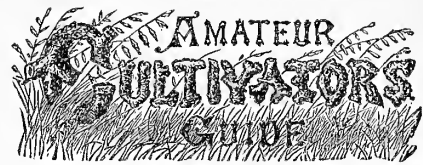
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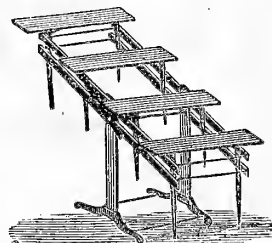
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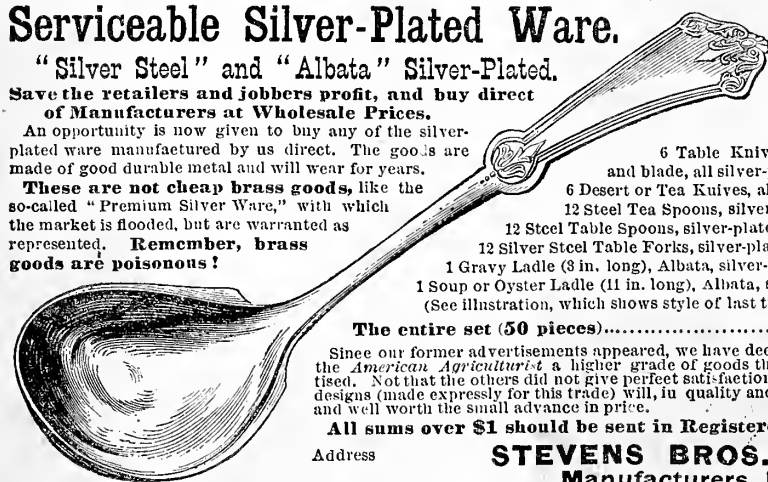
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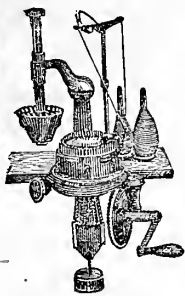
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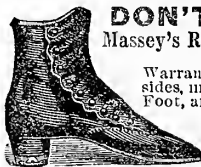
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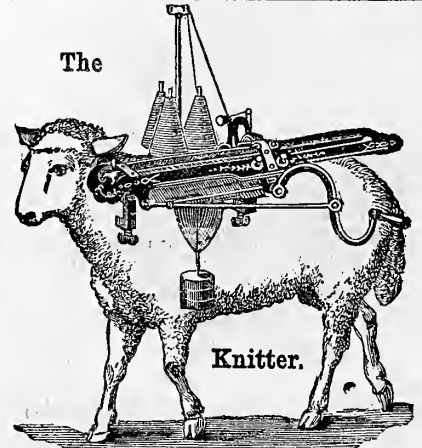
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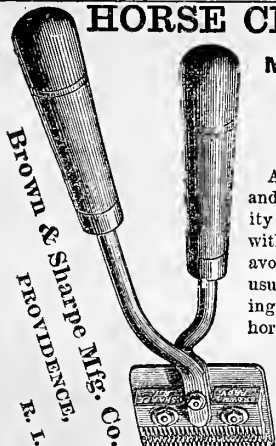
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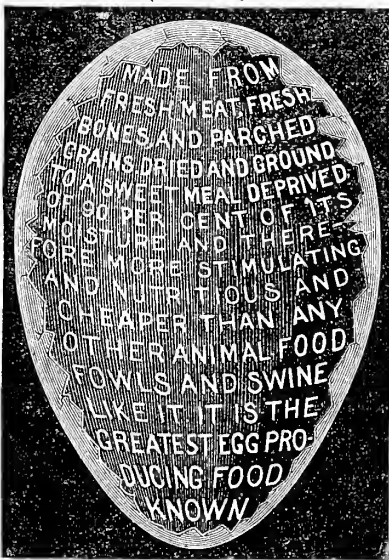
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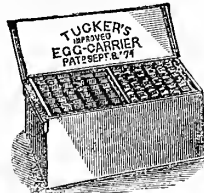
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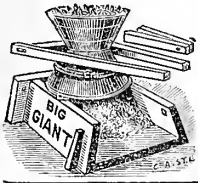
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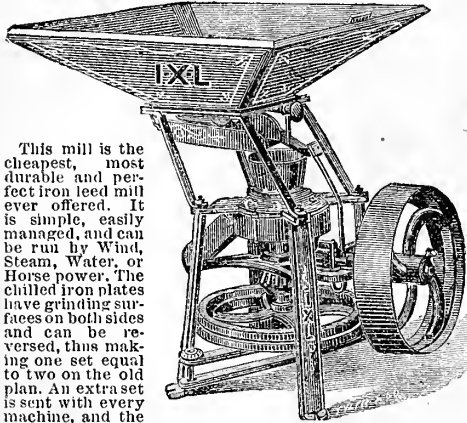


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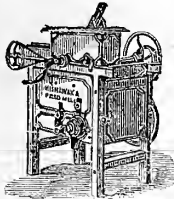


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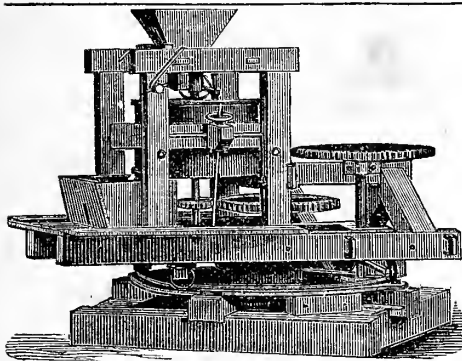
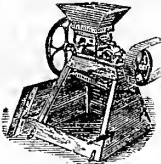
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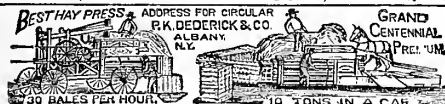
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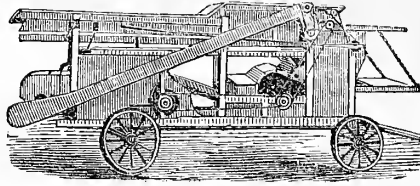
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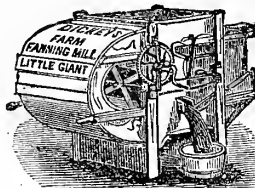
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Imperial Egg Food.

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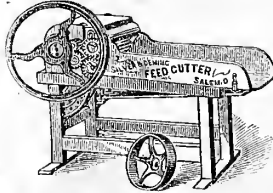
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No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the lowest grade in dirty condition.

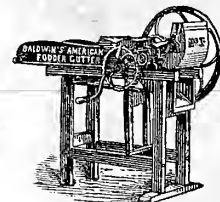
Address A. P. DICKEY, Racine, Wis.

THE SILVER & DEMING FEED CUTTER



Has no superior in the market. Celebrated for its great capacity, ease of running, and its adaptability to all kinds of work. Our "Improved Safety Fly Wheel" is the only successful device for preventing accidents so common to Power Feed-Cutters. Send for circulars giving prices and full particulars.

Made by Silver & Deming Mfg. Co., Salem, Ohio.
For Sale by
A. B. COHU, 197 Water St., New York City.



BALDWIN'S AMERICAN Feed Cutter.

Easiest running, fastest cutting machine in the market. Cuts all kinds of Feed, Hay, Straw, and Corn Stalks. Superior to any in the market. Send for Circular, containing Description and Price List.
C. PIERPONT & CO.,
Manufacturers, New Haven, Ct.

THE HARVEST OF 1878.

For description of A Wonderful Improvement in Harvesting Machinery, see page 400, October number American Agriculturist. For further information address Whiteley, Fassler & Kelly; Champion Machine Co., and Warder, Mitchell & Co., of Springfield, O., and The Toronto Reaper and Mower Co., Toronto, Canada.

OTIS BROTHERS & CO.,

348 BROADWAY, NEW YORK.

SOLE EXPORT AGENTS

FOR THE

New Champion Mower,

(FORMERLY KNOWN AS WHITELEY'S CHAMPION HAYMAKER.)

For Editorial Endorsement see American Agriculturist, for May, 1877. For testimonials see page 400, October issue, of same publication.

I SELL my Improved Harrow directly to Farmers, and ship it to any part of the country. Send for circular. S. HUTCHINSON, Griggsville, Pike County, Ill.



BRADFORD MILL CO.

Successors to Jas. Bradford & Co.

MANUFACTURERS OF

French Buhr Millstones,

Portable Corn & Flour Mills,

Smut Machines, etc.

Also, dealers in Bolting Cloths and

General Mill Furnishing.

Office & Factory, 155 W. 2d St.

CINCINNATI, O.

J. R. Stewart, Pres. W. R. Dunlap, Sec.

PRICE-LISTS SENT ON APPLICATION



Cotton Seed Huller AND FEED-MILL COMBINED,

For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Send for Circulars and Judges Report. Pay for itself in a few weeks.
D. KAHNWEILER,
120 Centre St., New York.

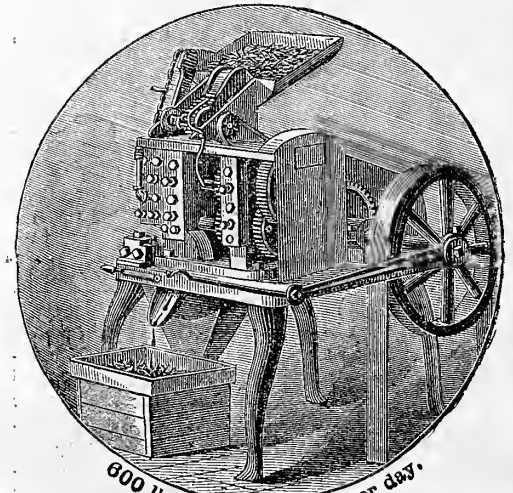
THE

GLOBE NAIL.

THE BEST HORSE SHOE NAIL EVER MADE.

About ten years ago the GLOBE NAIL COMPANY of Boston, put on the market the first pointed, polished and finished Horse Shoe Nails ready for driving. Previous to that time all Horse Shoe Nails were pointed, and most of them made, by the shoers in their own shops at the rate of but six pennies per day.

The Globe Nail was at once found to be much cheaper and better than any then in use. It soon became so popular that all manufacturers of Horse Shoe Nails were compelled to make their Nails to resemble the Globe. For the last ten years it has been the model. Each year the Nail has been greatly improved in quality, and to such a point have we educated the shoers that now they will hardly use a nail unless it is absolutely perfect.



600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

INTERNATIONAL EXHIBITION, 1876.
U. S. CENTENNIAL COMMISSION.

[BUREAU OF AWARDS.]

PHILADELPHIA, June 22, 1876.

No. 239, Globe Nail Co., Boston, Mass.:

Horse Shoe Nails, Pointed, Polished and Finished. The uniformity in size, smoothness of finish, hardness and tenacity of the iron, closeness of fibre, and excellence of the head and point, the tensile strength of body, and riveting properties of these Nails, unite in making them of the very highest class of manufacture.

Recommended for an Award of Merit.

DANIEL STEINMETZ, Phila., Chairman,

J. D. IMBODEN, Richmond, Va.,

CHARLES STAPLES, Portland, Me.,

G. L. REED, Clearfield, Pa.,

DAV. MCARDY, Aberdeen, Scotland,

T. DIEFENBACH, Germany,

Group
Judges
XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, Mo., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.
Gentlemen: Find enclosed advertisement and postal card concerning your Nail. (Referring to a scurrilous advertisement and postal card, disparaging the Globe Nail, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.) As I take a great interest in the prevention of cruelty to animals, —horses in particular,—I desire to say a few words in favor of The Globe Nail. Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the Globe Nail in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say it has no superior in point of Toughness, Shape, and Finish, if it has any equal. I have used about fifteen hundred pounds of Globe Nails a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat. I am willing to pay, without any suit, for all horses that are lamed in my shop by using the Globe Nail. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,

(Signed,) P. H. O'NEILL.

Horse Shoer, No. 1007 Broadway.

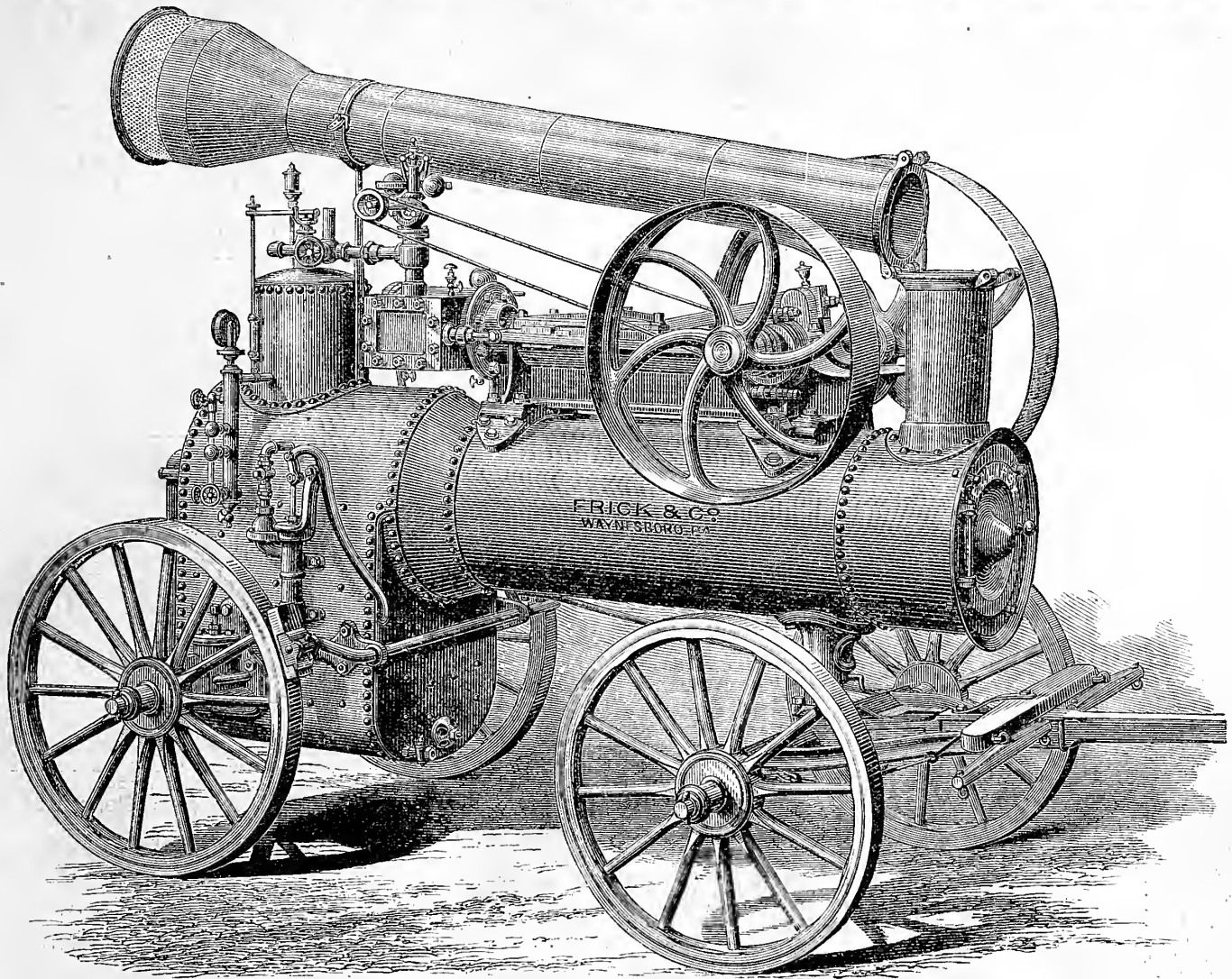
P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary.

P. H. O'N.

The best Horse is sure to win, SO
CLEAR THE TRACK FOR THE

GLOBE NAIL CO.

"ECLIPSE" FARM ENGINE.



HIGHEST CENTENNIAL AWARD and SPECIAL MENTION by the U. S. CENTENNIAL COMMISSION.

A MEDAL AND TWO DIPLOMAS.

INTERNATIONAL EXHIBITION, PHILADELPHIA, 1876. No. 235.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith:

REPORT ON AWARDS.

Product, Portable Farm Engine. ("Eclipse.")

Name and address of Exhibitor, Frick & Company, Waynesboro, Pa.

The undersigned, having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz.:

This engine gives the best results of any that were tested, and may be regarded as a well-made, strong, and useful machine. The traveling wheels are large and powerful. The boiler is suspended on springs for traveling, which are let down when at work. The boiler is capacious. There is a powerful brake on the hind wheels, very useful for staying the engine when at work. The engine is carried on the top of the boiler, resting on a powerful bed-plate, which is hollowed out to form a receptacle for oil leakage. This can be detached from the brackets, and the engine converted into a fixed horizontal engine if required. The governor has three speeds, and the crank shaft is counterbalanced. The engine saddle has provision for varying expansion. The water heater is large, of the ordinary diaphragm form, and the pump with air chamber is well constructed. The cylinder has balanced slide valve. The safety valve works by a spring, which is a good arrangement, particularly when the roads are rough. Driving wheel on each side of crank shaft.

GEORGE E. WARING, Jr.,

Signature of the Judge.

APPROVAL OF GROUP JUDGES.

FERMIN ROSILLO.

A true copy of the record.

E. OLDENDORF.

JAMES BRUCE.

EKEDA KENZO.

JAMES S. GRINNELL.

FRANCIS A. WALKER,
Chief of the Bureau of Awards.

Given by authority of the United States Centennial Commission.

A. T. GOSHORN,

Director-General.

J. R. HAWLEY,

President.

J. L. CAMPBELL,
Secretary.

Other Awards of First Premiums and Prize Medals to the

"ECLIPSE" FARM ENGINE,

Cincinnati Industrial Exhibition, 1874; Maryland State Fair, Baltimore, 1874; Virginia State Fair, Richmond, 1874; North Carolina State Fair, Raleigh, 1875; Delaware State Fair, Middletown, 1875; Pennsylvania State Fair, Lancaster, 1875; North Carolina State Fair, Raleigh, 1876; Georgia State Fair, Atlanta, 1877; Maryland State Fair, Westminster, 1877; also numerous County Fairs, and wherever else exhibited.

MANUFACTURED ONLY BY

FRICK & CO., WAYNESBORO, PA., U. S. A.

70 MILES WEST OF BALTIMORE, ON WESTERN MARYLAND R. R.

ALSO, MANUFACTURERS OF

STATIONARY ENGINES and BOILERS, CIRCULAR SAW MILLS, Etc,

For Particulars of the Above Send for Illustrated Catalogue.

TEAS REDUCED

OUR TERMS ARE THE BEST.
Send for our New Reduced Price List.
THE GREAT AMERICAN TEA COMPANY,
P. O. Box 5643. 31 and 33 Vesey St., New York City.

W. S. BLUNT'S UNIVERSAL FORCE PUMPS.

Secured by letters patent.

These pumps have enormous power, and are for the house or for out-door wells of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be removed, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP.** Also, Blunt's Sand Vacuum Chambers.—A complete protection against sand or gritty water in dug or driven wells, pits, mines, and rivers. For hand or steam pumps, all sizes, from 1½-inch to 4-inch suction pipe.

Send for circulars to
NASON MFG CO.,
71 Fulton and 71 Beekman St., New York.
Western Agency, Newton & Hale, Chicago.
Pacific Coast Agency, Dunham, Carrigan & Co., San Francisco, Cal.

HALLADAY STANDARD.

The only wind-mill awarded **TWO MEDALS** and **DIPLOMAS** by the Centennial Judges. Acknowledged by all to be the best made, the most perfect self-regulator, the most powerful and the most durable wind-mill known.

Every Mill Guaranteed as above.

Each piece fitted and numbered at the Factory, so that farmers and others can erect their own mills if desired, using our drawings and instructions for a guide. Send for Illustrated Catalogue & Price List.
U. S. WIND ENGINE & PUMP CO.,
BATAVIA, KAN.
CO., ILL.

A. B. GUNNISON,
MANUFACTURER OF

Cucumber Wood Pumps

For Wells and Cisterns.

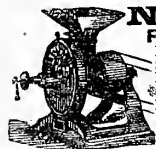
Agents Wanted. Send for Circulars.

ERIE, PA.

THE DRIVEN WELL.

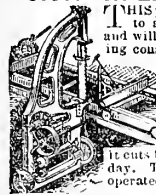
Town and County privileges for making **Driven Wells** and selling Licenses under the established **American Driven Well Patent**, leased by the year to responsible parties, by

WM. D. ANDREWS & BRO.,
NEW YORK.



**NONPAREIL
FARM & FEED MILLS.**
Bone, Drug, and Spice Mills. 10 sizes, for Hand or Power. Coated French Burr Stone Flouring and Corn Mills.
Were awarded highest Medal and Diploma at Centennial Exposition.
Illustrated Pamphlet sent Free.
Address: **L. J. MILLER,**
181 E. Front St., Cincinnati, O.

SAW MILL FOR THE PEOPLE.



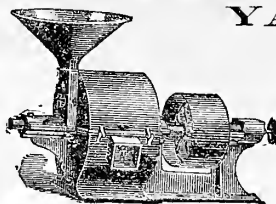
THIS patent portable Mulay Saw Mill is adapted to any locality, will saw any kind of logs, and will do as much work (power and hands being considered) as the best Circular Mills. Its frame, head-blocks, and working parts are of the most substantial and permanent kind, being made entirely of iron and steel. It is usually set up and started in from one to two days time. It is generally driven by thrashing engines of not exceeding ten horse power. It cuts from 2000 to 4000 feet of inch lumber per day. The Mill and Engine may conveniently be operated by two men. Send for circular.

INDIANAPOLIS, IND.

CHANDLER & TAYLOR.

E. & O. WARD, PRODUCE COMMISSIONERS.
POULTRY, GAME, BUTTER, &c., &c.
Also Agents for Hornby's Steam-cooked Wheat and Oats.
No. 279 Washington-st., N. Y.

(Est'd 1945.) Ref., Irving National Bank, New York City.



YALE IRON WORKS,

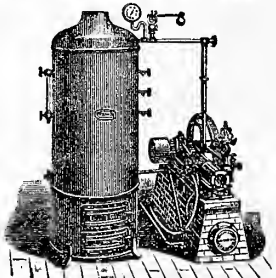
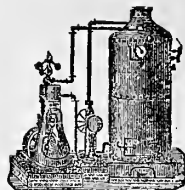
New Haven, Conn.,

Builders of the **Yale Vertical**, the best and most economical, either for land or marine use; also **Horizontals**, with or without the **Rider Cut-off**.

Rubber and Punching Presses.

YALE VERTICAL MILL,

Iron Frame; French Burr; Self-Oiling; Self-feeding; Adjustable Balance; Long Bearings, Cheapest, best arranged, best finished, and for quality and quantity ground no superior. Send for circular.



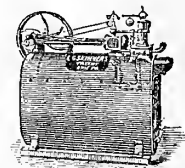
SNYDER'S

LITTLE GIANT STEAM ENGINE.

FOR FARMERS, MACHINISTS, PRINTERS, AND ALL REQUIRING LIGHT POWER.

Sizes from One to Six Horse Power. Prices for Engine and Boiler Complete, from \$150 to \$450. We make the **Strongest Boiler** and the **Best Engine** in the country. Call at our Factory and examine, or send for free illustrated and Descriptive Catalogue.

SNYDER BROS., 94 Fulton St., New York.



SKINNER PORTABLE ENGINE

2½ to 10 H. P.

Made by Special tools.

All parts duplicated.

Send for circular.

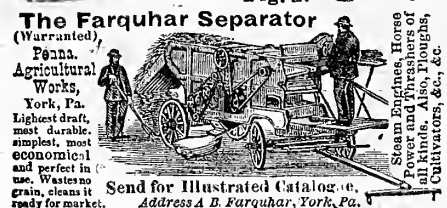
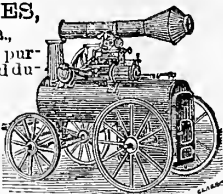
SKINNER & WOOD,
Erie, Pa.

STEAM ENGINES,

A. B. FARQUHAR, York, Pa.

Cheapest and best for all purposes—simple, strong, and durable. Also **Traction Engines** for common roads.

SAW, GRIST AND RICE MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

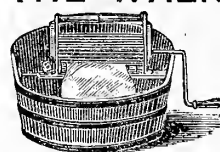


Building Felt.

This water-proof material, resembling fine leather, is for outside work (no tar substances used) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

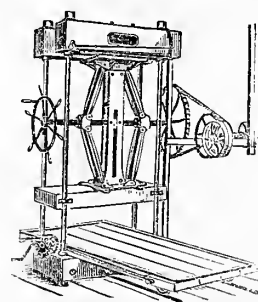
C. J. FAY, Camden, N. J.

THE WALKER WASHER.



Thousands of Them in Actual Use. They are a Perfect Success. Simple, Durable, and Cheap.

Agents wanted in every town where they are not already being sold. Retail price \$8. Send for circular. Address **ERIE WASHER CO., Erie, Pa.**



POWER Cider and Wine Press

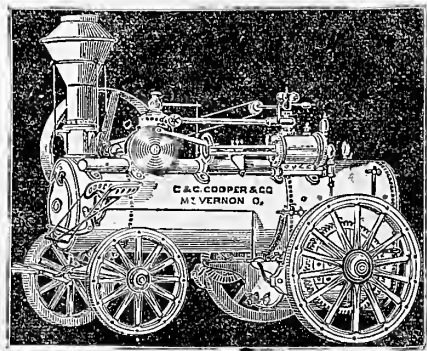
WITH

Double Platform.

**BOOMER & BOSCHERT
PRESS CO.,
SYRACUSE, N. Y.**

Imperial Egg Food.

(See Advertisement, page 37.)



NOW IS THE TIME TO APPLY

FOR AN AGENCY FOR

C. & G. Cooper & Co's Traction

OR

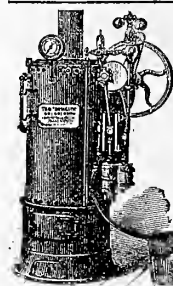
SELF-PROPELLING FARM ENGINES

By a simple but effective attachment made to our common farm engines, we are able to offer a **Traction or Self-Propelling Farm Engine**, which not only propels itself, but hauls a water tank and separator over any road, up hill or down, with the aid of one pair of horses.

This engine is a complete success, having been thoroughly tested for two seasons. Nearly one hundred of them have been sold the last year, and all are giving the best satisfaction. They cost but little more than the common farm engine, and enable the thrasher to operate with from two to four less teams, and to move much faster than with horses. Circulars, containing cuts, descriptions, prices, and testimonial letters from our customers, furnished to thrashers, free, on application.

Agents Wanted in every County in the wheat-growing States. For Circulars and for Agencies, apply to

C. & G. COOPER & CO., Mt. Vernon, O.



THE "DOMESTIC" ENGINE.

2 and 4 Horse-Power.

PRINCIPAL FEATURES.
Cold Bearings, Hardened Steel Pins, Casted Steel Connections, and all parts interchangeable.
WROUGHT-IRON BOILER.

Nothing Cheap but the Price.

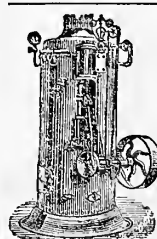
F. F. & A. B. LANDIS,
Manufacturers, Lancaster, Pa.

STEAM ENGINES

We build the best Portable **FARM ENGINES** in the world. Have more power with less water and fuel than any others. Low prices. We have the largest line of Engine patterns in the U. S. Successors of Utica Steam Engine Co., formerly Wood & Mann, of Utica, N. Y.

TAYLOR MANUFACTURING CO.,

Westminster, Maryland.
Good responsible Agents wanted in territory not taken. Send for Illustrated Catalogue.



BOOKWALTER ENGINE.
Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3 Horse-Power.....\$242.00

4½ " " 283.50

6½ " " 343.50

Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO.,

Springfield, Ohio.

or 109 Liberty St., New York City

BOOKS for FARMERS and OTHERS.

[Published and for sale by the Orange Judd Company,
245 Broadway, New York. Any of these books will be for-
warded by mail, *post-paid*, on receipt of price.]

Allen's (R. L. & L. F.) New American Farm Book.....	\$2 50
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American Weeds and Useful Plants.....	1 75
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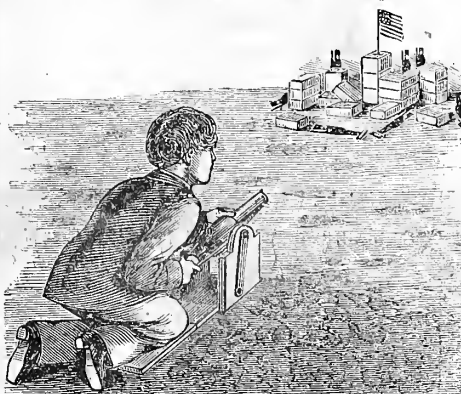
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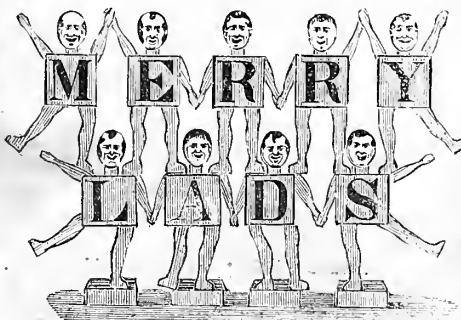


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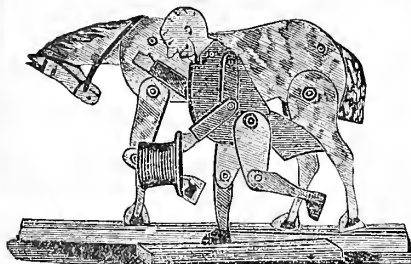
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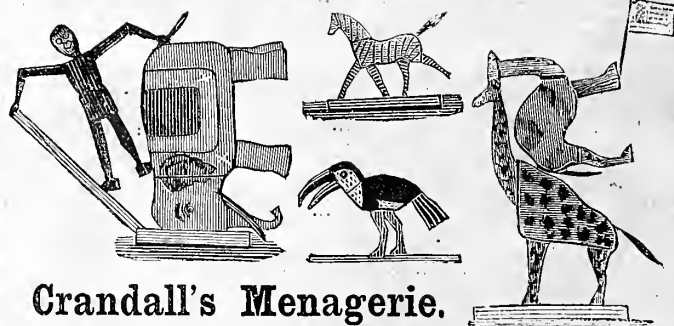
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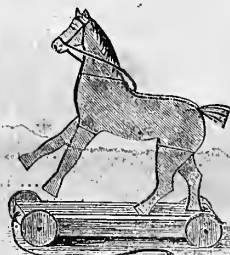
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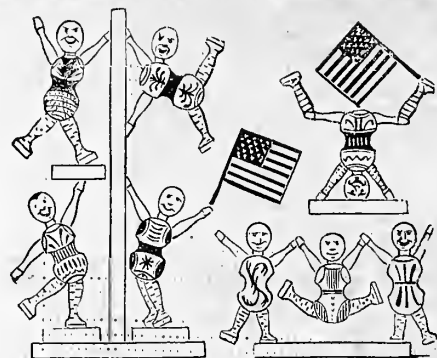
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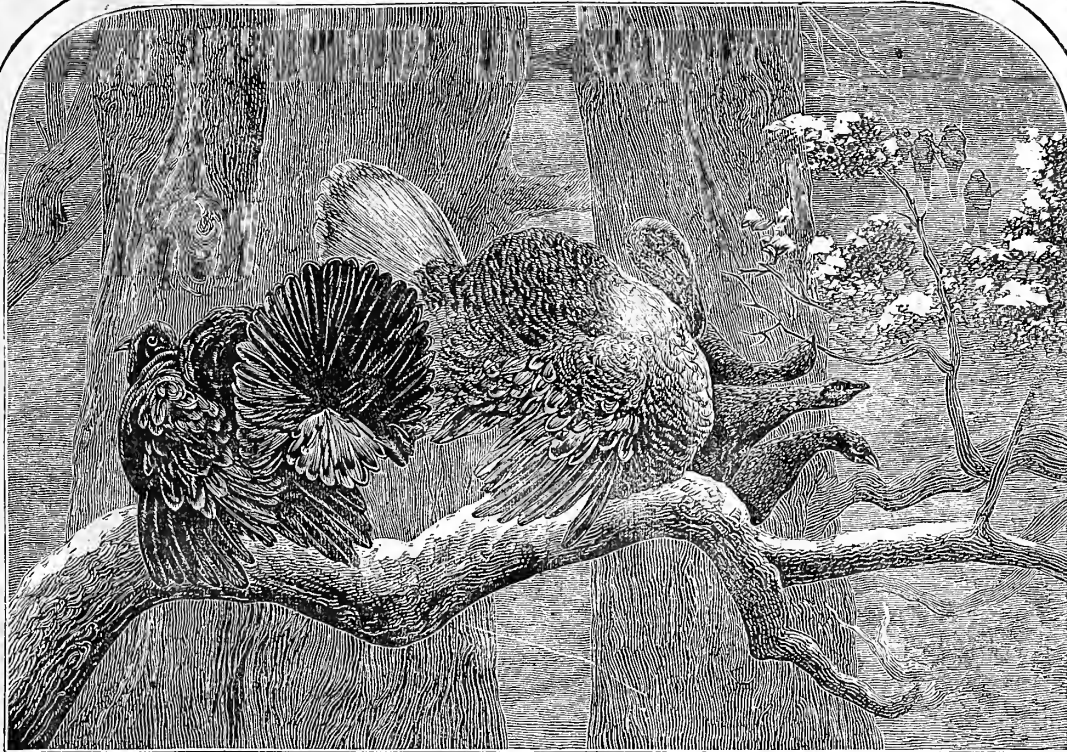
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FEBRUARY, 1878.

AMERICAN AGRICULTURIST

FOR THE FARM, GARDEN & HOUSEHOLD.



VOL. XXXVII.

NUMBER 2.

PUBLISHED BY THE
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The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

By purchasing a ROBBINS WASHER you can count the hard drudgery of the washboard among the things of the past.

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Sample to those desiring agencies, \$3.

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ART OF CLEANSING FABRICS,

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The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in uniting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

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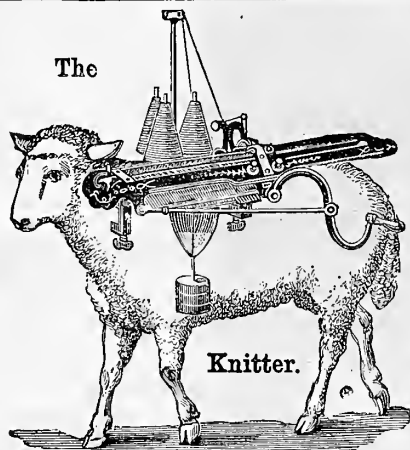
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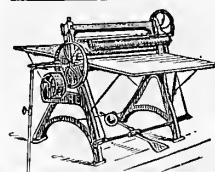
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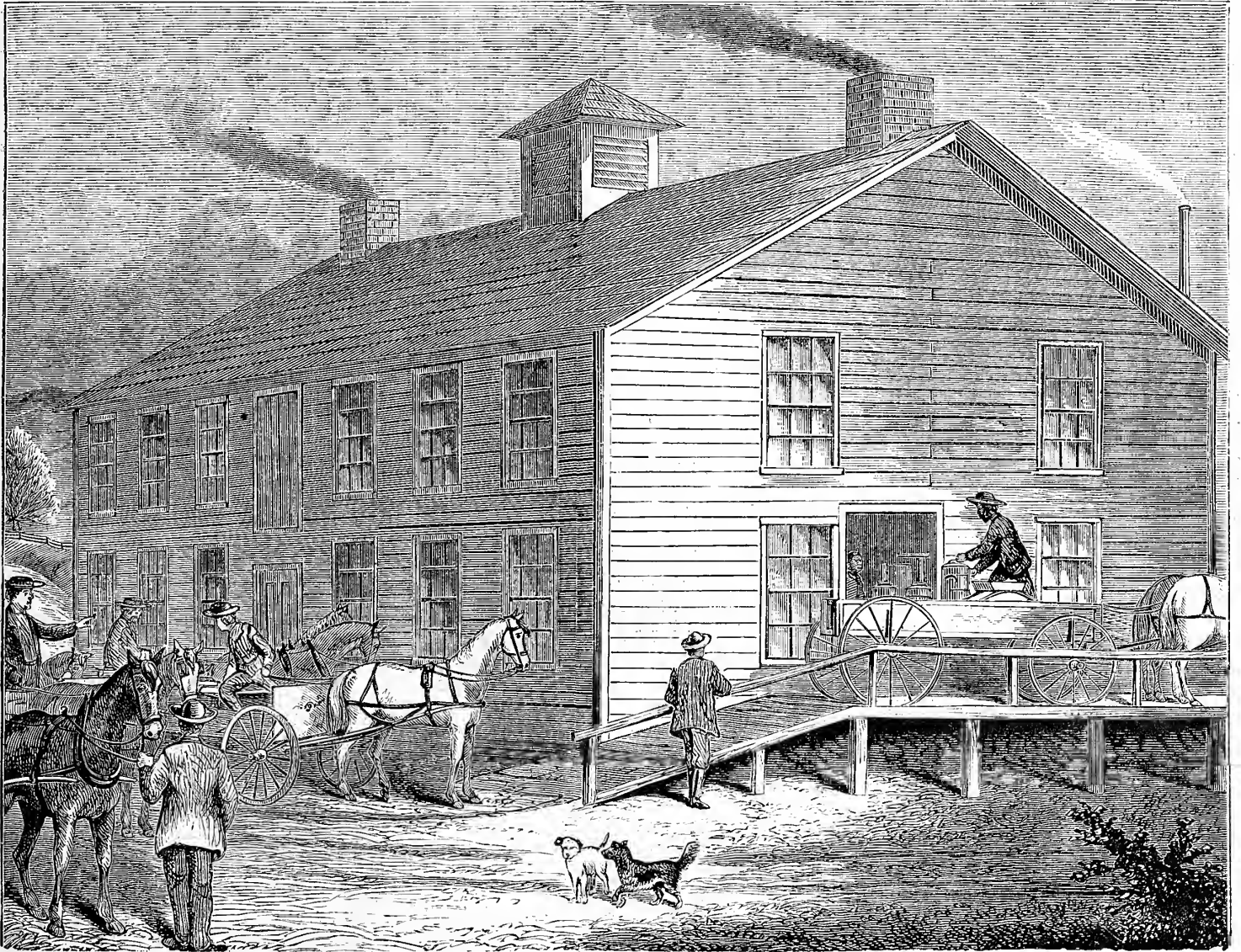
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VOLUME XXXVII.—No. 2.

NEW YORK, FEBRUARY, 1878.

NEW SERIES—No. 373.



A VERMONT CHEESE FACTORY. — Drawn and Engraved for the American Agriculturist.

Upon subsequent pages, we have quite liberally illustrated the internal arrangement, and the appliances of a cheese factory, and to complete the series, we give above an engraving showing the exterior of a Vermont Factory, from a sketch by an artist of that State. The introduction of the factory system into a farming neighborhood, not only quite changes the mechanical operations of the dairy, but has a marked effect socially, upon the farmers themselves, and their families. Under the old system each worked by himself, in his own way, with but little reference to what his neighbors were doing, and rarely comparing his results with those of others. The factory changes all this, and by at once establishing a common interest, creates a community of thought and feeling; it becomes absolutely necessary that the neighbors should meet and discuss, to compare methods and ask advice; it leads to reading, and a general increase of intelligence and mental activity. In those States in which dairying is an important branch of farming, there are already Associations of Dairymen, who hold annual conventions, which are often attended

by their wives and daughters. It is no disparagement to other similar gatherings, to say that we have never seen a gathering of farmers any where that seemed to be more thoroughly respectable, intelligent, or manifested more interest in the matters before them, than those we met at a meeting of the Vermont Dairymen's Association. The factory system divides the business of dairying into two important branches, viz: The production of milk, and the making of cheese, and each presents numerous subjects for consideration, which require accurate practical and scientific knowledge in discussing them. The annual conventions, held in various parts of the country, at which all the topics related to both branches of the business are thoroughly discussed, have already produced excellent results, manifested in increased profits, and a considerable improvement in the quality of the products. At these meetings the addresses and discussions are in part by farmers and factorymen themselves, and in part by teachers of scientific agriculture and chemistry. But besides these annual conventions, there are all over the country, and of

daily occurrence, informal meetings, the discussions at which have an important influence upon the business of dairying. Such an informal dairyman's meeting is suggested in the engraving; the farmers who daily supply milk to the factory, meet there in small groups. On such occasions the talk is of the business in which all have an interest, and cows, feed, milk, and management are discussed, hints are given and experience told, and in the long run these informal meetings are quite as valuable as the larger ones; indeed, this intercourse, and mutual instruction, this bringing farmers into frequent contact, is one of the useful incidents growing out of the factory system, and which extends its good influence among the farmers to matters other than the dairying. Weights and a balance on the right side of the account book are convincing arguments, and the farmer who can point to a heavy balance in his favor, will find his associates ready to learn his method of managing his animals. While the cheese factory is profitable as an industrial institution, it is at the same time an educational one, that is practical and useful.

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Calendar for February.

Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, C., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun. rises.	Moon sets.	M. rises.	Sun. rises.	Moon sets.	M. rises.	Sun. rises.	Moon sets.	M. rises.
1	F	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
2	M	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
3	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
4	W	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
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6	F	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
7	M	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
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9	W	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
10	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
11	F	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
12	M	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
13	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
14	W	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
15	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
16	F	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
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19	W	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
20	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
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22	M	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
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24	W	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
25	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
26	F	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
27	M	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
28	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
29	W	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9
30	T	7 13 5	11 14	7 9	7 13 5	11 14	7 9	7 13 5	11 14	7 9

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH.	N. CHA.	STON.	CHICAGO.
New Moon	2 33 mo.	3 21 mo.	3 9 mo.	2 57 mo.	2 27 mo.	2 27 mo.
1st Quart.	10 33 mo.	8 21 mo.	8 9 mo.	7 57 mo.	7 27 mo.	7 27 mo.
Full Moon	17 33 mo.	6 21 mo.	6 9 mo.	5 57 mo.	5 27 mo.	5 27 mo.
3d Quart.	23 10 29 ev.	10 17 ev.	10 5 ev.	9 53 ev.	9 23 ev.	9 23 ev.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1878.

"The oldest inhabitant" does not remember a winter that began so favorably as the present one. To plow on the last day of the year, with the weather like that of May, while the cows are pasturing on the meadows, is, for the Eastern and Northern States, something remarkable. Fortunately, there has been little harm done by the extraordinary mildness of the early winter; and much of the spring work has been put in a very forward state. This is a great help; a farmer, unless he can be ahead of his work, must labor under many disadvantages. Of all men, the farmer most lives for and works for the future. He plows and sows, months before he reaps. His young stock always appear to him as the future matured animals, and it is of these that he thinks, and not the young creature which he feeds and nurses. He must plan for years ahead; when he breaks up a sod he has in his mind's eye the field again in grass five or six years hence, and the work of all those years is to insure a good meadow then. No man needs to be more patient than he, nor to wait more cheerfully for good or ill, he knows not which, that may befall him. And now that winter seems hardly to have begun, we are already anxious about the spring, which will be at hand in a month, and plowing what shall be done about this or that. The management of properly regulated farms should be planned, once for all. There should be no changes, except those regularly recurring which arrive year by year, and which follow one another as orderly as the changes of the seasons. The great fault of American farming is this constant desire for change. We change our farms as we would change the fashion of our coats. We rarely think of them as homes which our children shall occupy after us. It is the same with our stock, crops, and manner of farming. As the fashion comes up, or any new thing or idea is talked about, we cast aside, or leave the old, and take up the new. We do not take time to learn the value of what we have, or that there is good in every thing, if we only persevere and bring it out. We take up dairying, for instance, trying all the popular breeds of cows, and leave that to take up hops, tobacco, or fruits. Then we go to grain-growing, and finally begin to think the West, or the South, or orange-growing in Florida, is more desirable, and try to sell out; in the meantime we give no heart to our

business, and that necessarily languishes. There are many exceptions, but this is the rule. We hear it talked over wherever farmers gather, and read of it in reports of farmers' clubs, and conventions. This is unprofitable. The farmer should be conservative, steady, patient, persevering, and contented, if he would be a successful and happy man. While the whole world depends upon him for food and clothing, he can never fail to have profitable employment, or find a market for his crops. The best farmers are those who discover what their farms are best fitted for, what they can do the best, and persevere in that—year by year becoming more proficient, more experienced, and more successful.

Hints for Work.

Seeds of All Kinds should be procured at once. Seed dealers are overrun with orders just when farmers want the seed to sow, and the chances are, that these wants can not all be supplied at a day's notice. Those who buy seed at home, sometimes have to leave their work in the field and hunt up seed from their neighbors, who, having sold the best, have only the refuse left. Prices are always higher just at sowing time. The man who must have an article, is in the power of the seller.

Procure Good Seed.—Fresh plump seed, free from seeds of weeds, should be procured, even if it costs much more than old and foul seed. There is no economy in buying poor seed, but a great loss; and care in selection will be well repaid.

Feeding Stock is the most important labor of the winter season, and intimately related to this is

Making Manure, which is, or should be, carefully considered in feeding stock, and where the quality of the manure-heap is carefully looked after, the stock will always be well and profitably fed.

Rich Manure can only be made from rich food. Animals add nothing to the manure. If we feed straw, we get back as manure something less than the straw we feed, and straw alone is very poor manure. If we feed oil cake meal, corn meal, bran, and similar rich food, to mature animals, they consume the starchy and fatty portions, while much of the nitrogen and phosphates go into the manure heap along with the straw or hay eaten, which give the needed bulk to the manure. The more nitrogen the food contains, the richer will be the manure. It is thus that the statement made by chemists, that the manure made by feeding a ton of bran, or linseed, or cotton seed oil cake, is for some soils worth more than the food itself, can be satisfactorily explained.

Oil Cake is the refuse of the manufacture of linseed and cotton seed oil. Many thousands of tons of it are made in this country yearly, but it is almost all exported to England, where the farmers feed it to fattening animals for the sake of the manure. The use of this rich food is to be highly recommended, and were it properly understood and appreciated, not a ton of it would leave this country.

Bran and Middlings may be fed to all kinds of stock. All, from horses to poultry, eat these eagerly, and thrive upon them.

Corn Stalks and Straw should be cut up with a fodder cutter if only to be thrown into the yard, or used for litter. Short stalks absorb more liquid than long; the manure from them is easier handled, and they rot more quickly. A fodder cutter run by a two-horse tread power, will cut 100 pounds of straw, or stalks, in five minutes, and the cost of the machine and often labor will be repaid in one season in the convenience of handling the short manure.

The Manure Heap may be made in a central place in the yard, and the different kinds of manure should be wheeled out of the stables and pens, and mixed together in the heap. We find it pays to turn over the heap once or twice during the winter, mix it thoroughly, and break up all the lumps. This makes it fine, and fit for use early in spring.

Manure is Wasted by exposure to washing rains, or by being trampled by stock in wet yards. It may easily lose three-fourths of its value in this way.

Manure that has been Drawn Out during the fine fall weather should be evenly spread, and not left in heaps, otherwise the places covered are too rich,

All About California.—Those of our readers who desire reliable information in regard to the Pacific Coast, should get the "S. F. Weekly Bulletin," advertised in our columns. Its reputation is first-class in all respects. It is a good literary and family paper, as well as a faithful exponent of Pacific Coast facts. Mr. J. W. Simonton, the well known Agent of the Associated Press, is one of the principal owners of the "Bulletin."

and the rest of the ground does not get its share. We see many fields now dotted over with heaps, hauled out in December. Leaving them until spring, is one of the small leaks which help to make greater ones.

Watering Stock is a very important part of the care needed for them at this season. Empty and clear the troughs of ice every afternoon, so that when filled in the morning there is no ice to chill the water. In cold weather water should not be drawn from the well until it is needed for the stock. Covers should be provided for all outside water troughs to keep out snow.

Clear away the Ice from watering places, gates, and all places where cows would be in danger of slipping; many a calf is lost by reason of cows falling upon icy places. If nothing else can be done, scatter upon the ice some coal-ashes, or sand, which will thaw in during sunshine and will freeze on to the surface at night, and make it rough.

A Smoke House may be prepared and set up ready for use next month, when bacon and hams may be taken from the pickle. A store of corn cobs may now be saved for the smoking. A smoke house, 6 feet square, and 8 feet high, made of double boards, will be sufficient to cure a large quantity of meat by beginning early. Finish this work, and have the meat packed away safely before the flies appear.

Stone Boats.—A very seasonable work now is to procure some heavy plank, and make a stone boat for every team. One does not know how useful these implements are on a farm, until they are tried. To haul stone is only one of their many uses.

Harness will be greatly improved by taking it apart, washing with soap and water, and dressing it with some good water-proof preservative. We have used the "Tunyoap Water-tight," made by the Tunyoap Manufacturing Co., of Boston, for harness as well as for the soles and upper leathers of boots. It renders the leather soft and impenetrable by water.

Draining in wet swamps can be done all through the winter months with ease and comfort. We provide a plank about 12 feet long, either at the side of the ditch or in the bottom of it, to stand upon while working. This keeps the feet dry. But little frost penetrates swampy ground, even in the coldest weather, and if the surface that is partly dug is left loose at night, it can be broken up with ease. Contracts for ditching 2 feet deep, and 2 feet wide at the top, have been made for 25 cents a rod.

Grinding Feed is profitable. Ground feed goes farther in use than whole grain. Where the money can be afforded to purchase a mill, this can be done with profit where 10 head of stock are kept. A mill that will grind 4,000 bushels before it needs repair, can be bought for \$50, or less. There is a saving of 400 bushels in the shape of toll, and the time of going to mill besides. This latter will be about equal to the time taken up in grinding at home, and there will be left the value of the 400 bushels of grain for the \$50 spent, and the mill can be made as good as new at a small cost.

Young Stock.—To keep young stock growing through the winter, will hasten their maturity by half the time. A good thrifty 2-year-old that has had no set-back, will be equal in weight to a 4-year-old that has not grown during the winters. The cost of two years feed is saved by the expenditure of the little extra feed and care for two winters. This principle applies to all live stock.

Over-Feeding is a waste of food, and causes a loss of flesh. Indigestion from repletion, stops growth, and gives trouble to restore health and thrift. The art of feeding is an important part of a farmer's knowledge, and should be studied with care, and practised with patience and close observation. The use of weights and measures is not a waste of time and labor. There is much to be learned and saved by them. Every feed-box should have a one-quart and a two-quart scoop, and a feed measure holding a known quantity. A half-peck measure (4 quarts) is a handy size to have.

Feed Troughs and Racks should be provided for yard feeding, both for grain and fodder, so that nothing may be trampled under foot, and wasted, and strong animals may not drive off or annoy the

weaker ones. We can easily contrive so that the animals of all kinds must do precisely as we wish.

Separate Yards for feeding may be made by putting up a few panels of portable, or other fence, across the main yards. A few strands of fence wire, stretched from one side to the other, make a good division, and the snow does not drift against it.

Smutty Corn.—The wet weather of the past summer has caused much smut to grow in the corn. This fungus is poisonous to animals, and doubtless is the cause of much unexplained trouble. The smutty stalks should have been laid on one side in the field; but if not done, throw out now and burn. The dust of the smut is its seed, and, if permitted to escape, will perpetuate the pest.

Cows.—Preserve strict cleanliness in the cows' stables. Dry cows may be fed moderately to keep them in fair condition only. Heavy milkers, when near the time of coming in, need judicious treatment, so as not to unduly stimulate the secretion of milk. Milking cows should be kept warm. If the udders, or teats, become foul, they should be washed with warm—but not hot—water, and wiped perfectly dry at once. To wash the teats, and leave them to dry, will cause cracks; the same effect will occur if the teats are wetted with milk and left to dry. The teats should be kept dry while milking, if one would avoid cracks and sores.

Ewes and Lambs.—Light feeding of grain is preferable for ewes at this season. Too much corn meal will be positively injurious. Half a pint of corn a day will be sufficient, alternated with a pint of wheat, bran, or whole rye. A mixture of one quart of salt, and one ounce of sulphur, placed in a box where the sheep can always reach it, will be beneficial. Early lambs with their dams should have warm pens in sheltered parts of the stables during the coldest weather. Such pens are very useful for ewes that reject their lambs.

Young Lambs are troubled with few complaints; the chief of these is costiveness, which may easily be remedied by giving a teaspoonful of castor oil. New-born lambs should have a little of the oil applied to their hind parts to prevent the glutinous dung from closing the bowel. This should be looked for and guarded against, or remedied without delay.

Young Pigs that arrive this month need the best of care, or they will be lost. They are hardy animals after the first dangers are over, and they are able to help themselves. A stove in the piggery would be found very useful; or if a separate building, well warmed with a stove, could be provided for occasional use in the cold weather, many young animals might be saved that are now lost.

Poultry.—We find that it pays well to warm the feed for hens. It is a very easy matter to put a pan of corn in the oven over night, and have it warm for the morning feed. For the afternoon feed we put in the oven about noon a pan of cracked corn covered with water. When this has swollen, and soaked up the water, it makes excellent feed. Some of the Imperial Egg Food may be given twice a week at this season.

A Clean Poultry House is indispensable, if the fowls are expected to be healthy. It is a small job to scrape, sweep, and dust the floor, and remove the droppings twice or three times a week during feeding time. The droppings should not be stored in the poultry-house, but in a dry place, packed in barrels, and kept for use in the spring.

Sundry Matters.—It will be well to turn out potatoes that have been kept in barrels, or bins, to prevent sprouting. Potatoes have a tendency to sprout this season, and should be closely looked to.... Air the cellar thoroughly on a cool dry day to lower the temperature; 35 degrees is warm enough for a vegetable cellar.... Clean machines, washing the gummy parts with kerosene oil, and wiping them off with a bundle of rags dipped in sperm oil.... Watch root pits closely, and see that the ventilation is ample and perfect. Roots are growing very much in the pits this winter in consequence of the mild weather. To prevent this, we have opened the pits at the bottom by thrusting in a sharp-pointed bar every two feet, and letting in cold air to reduce the temperature.... Ice should be gathered as early as

possible. Late ice is not so solid as that gathered during the short days when the sun has little power to soften and make it porous.... To preserve health, keep the feet warm and dry, the throat and chest well protected, and when warm with exercise avoid standing still, or cooling off suddenly. The last named precaution relates as much to working animals as to their owners.

Notes on Orchard and Garden Work.

If one near the end of a letter begins to talk about the weather, it is regarded as indicating that the writer is running short of ideas. To avoid any such suspicion, we put the weather at the beginning. What a winter this has been, thus far! We write on January 15th, and there have not been, we should judge, 15 days (12 miles N. and W. from New York City) in which late fall or early spring work could not go on in the open ground. The gardener or farmer who had not his fall work thoroughly done up this New Year's day, is not likely to ever have it so. Gossip about the weather is of but little use unless we can draw some lesson from it. Cultivators in this vicinity have paid dearly for one lesson—which is, that routine work will not always answer. Those who have followed their usual custom of covering up their pits of roots and their trenches of celery for the winter, on a given date, have learned that this is a not a safe practice. The losses from decay are said to be very general, where the full covering has been placed on stored vegetables, while those who postponed the covering until it should be found to be needed, escaped damage.... In protecting living plants, we notice that the practice has been much modified of late years. It is quite easy to kill a half hardy plant with too much covering; indeed it is not unlikely that many plants have the reputation of being "very tender," instead of "half hardy," because in the trials that have been made of them they have been covered too much. A clump of *Osmundus*, *Skimmia*, and other plants heretofore regarded as unsafe in the open ground in our climate, we have now in their third winter out. Pea brush is stuck around them, and enough salt-hay thrown in among it to shade the plants, but not sufficient to prevent circulation of air. They came through the last winter, which was a very severe one, unharmed. It is likely that with similar treatment, other plants which we feel obliged to house might be left out of doors. Strawberry plants are often killed by too thick a covering, under which they do not get fairly dormant. What the effect of this unusual weather will be upon peaches, and other easily excitable trees and plants, remains to be seen.

Orchard and Nursery.

Were we to devote the whole paper to it, we could not say all that might be said in any one department; hence we point out each month the important matters on which a novice is most likely to need a reminder. This month one may find occupation in earing for the old trees he already has, or in preparing to plant new orchards, and it may happen that he must attend to both.

Renovating Old Trees.—There is a popular notion that trees get into an unproductive condition through a neglect of pruning, and that a thorough pruning is all that is needed to restore them to a healthful and fruitful state. This is a mistake. While pruning is usually needed, this is not the chief want of the trees. They have been brought to their poverty by starvation, and their great need is food. This being supplied, pruning, scraping, and other treatment may come in to aid.

Manure being the first thing needed, the fertility of the orchard may be brought up by a generous application of barn-yard manure, spread upon the surface, and turned under by a shallow plowing. In the absence of sufficient manure, then green crops, buckwheat, or clover, may be sown, to be turned under, with application of lime, or ashes. Having provided for the soil, then

Pruning may be considered, if the variety is known to be a desirable one. In pruning an old,

or any other tree, it should be done with a definite object. If branches have been broken, or are partly decayed; if the head is so crowded that light and air can not enter; if limbs cross and chafe one another; if the head is quite one-sided, or if for any other reason a removal of a portion of the top will be beneficial, then use the saw.

Time and Means of pruning.—The preferable time is when severe weather is over, and before vegetation has started, which in the Northern States is generally the latter part of this, and the first part of next month. Use a pruning saw or other narrow-bladed saw, with the teeth set wide; smooth the wounds with a drawing knife, and then cover them with melted grafting wax, or thick paint.

Scraping and Washing the old bark is useful; sufficient is said about this on page 51. If the tree produces indifferent fruit then, besides the renovation already mentioned, it should be

Grafted with some good sort, but it will be of little use to graft an old tree if it is still to be starved. With a large tree, it is better to graft only about one-third of the head each year, beginning with the branches in the center of the tree. The time is just as the buds begin to swell. The mechanical operation was very plainly described, and fully illustrated, in April, last year. It is not practicable to repeat these elementary matters every year, and for this reason we advise every one who has an orchard and fruit garden to provide himself with a work upon tree culture. The back numbers may be procured for 15c. each. In planting new orchards, no time should be lost in making the

Selection of Varieties, if not already done, and in ordering the trees. In deciding what to plant, the disposition to be made of the fruit is to be regarded. If the fruit is to be for family use only, then the varieties should comprise those that will give a supply from the earliest to the latest. If fruit is for market, and to be shipped a long distance, then but a few sorts known as the best for keeping and shipping will be better than many sorts ripening at different times. Those whose orchards are near cities, find large and showy early fruit more profitable than late kinds. In selecting varieties, those not familiar with them will do well to consult the fruit growers of their vicinity; this advice will be of far more value than that of persons at a distance.

"Where Shall I Buy?"—is a question often asked of us, and to which we reply in general terms:—Buy only of nurserymen of established reputation—the cards of such are found in our advertising columns. A little extra freight, or a few cents in the price of a tree, is nothing when compared with the risk in purchasing of unknown parties. One must wait from 6 to 10 years for his trees to bear, and the chance of finding them all wrong at the end of this time, is one not to be taken. In a newly settled country one may profitably buy

Root Grafts, which are sold at some nurseries at very low rates. These consist of a part of the root of a stock, with the cion inserted and waxed in. The work is done in winter, and the grafted roots kept in earth in a cool cellar until spring. A thousand of these grafts will pack in a box of moderate size. They should be set out in spring as soon as the soil can be well prepared, in rows $3\frac{1}{2}$ feet apart, with the root-grafts 18 to 24 inches apart; the grafts, which should have only half an inch or so of the top above the surface, are usually set with a dibble, and care should be taken to have the soil well packed around the root. The ground must be kept clean, and the young trees kept to a leading stem the first year, in which they will grow from one to two feet high. In subsequent years, the cultivation should continue, the trees shaped as needed, and with three, or at most four years growth, they will be large enough to plant out. There need be but few failures, and in localities far from nurseries may be made a source of profit.

Mice and Rabbits are likely to be troublesome in localities where snows still fall. Prevent damage as suggested last month.

Insects must be looked after now. The clusters of eggs of the *Tent Caterpillar* may easily be seen against the sky in a dull day; they are to be looked

for as a ring about $\frac{3}{4}$ of an inch wide, near the ends of the twigs. Cutting and burning one of these destroys about 500 caterpillars. . . . *The Canker Worm* has unfortunately reached places where it was not known a few years ago. The insects come out of the ground in early spring—sometimes in February in a warm time—ascend the trees to lay their eggs, from which will come a devastating brood that will take every leaf. They are easily kept down, as the female is wingless, and has to climb up the trunk. A barrier applied early, and kept in good condition, will stop them. There are numerous contrivances; the simplest is a band of stiff paper applied closely to the trunk, to which is applied pine tar or printer's ink. These must be examined every few days, and the application renewed if not sticky, as sometimes dust and the bodies of dead insects make a bridge for the living insects to cross upon.

Fruit Garden.

The plants in the fruit-garden coming into bearing much sooner, and being watched more closely, the need of abundant manuring is more manifest here than with the slower growing and longer-lived trees of the orchard. What is said of the necessity of perfecting plans in advance, and preparing for planting under Orchard, applies here. The fruit-garden is for what are known as Small Fruits; if trees are admitted they should only be

Dwarf Fruit Trees.—We were surprised to learn from a usually intelligent merchant a few days ago, that he supposed dwarf pears were distinct kinds, and different from those upon large or standard trees. As others may have the same impression, it may be well to say that the dwarf pears, apples, etc., are made so by grafting or budding the ordinary varieties on a stock that controls and stunts their growth; this causes them to come into bearing very young, and to be very fruitful in proportion to their size. The pear is grafted on a quince stock, to dwarf it, the apple, for the same purpose, on a kind of apple called the Paradise. There are also dwarfing stocks for cherries, plums, etc., and there are two or three peaches that are natural dwarfs.

Shall We Plant Dwarf Trees? has long been discussed by fruit-growers. With the exception of a few pears, the conclusion is that for profit they are of but little value, but if one wishes to grow many varieties on a small space, or for ornament, they possess much interest for the amateur.

Pruning may be done on dwarf trees, and if grapes, currants, gooseberries, etc., were not finished last fall, they should be pruned on mild days.

Supports are needed by blackberries, for which we use a stake standing about 6 feet out of the ground; some give them a wire trellis, such as we use for raspberries, but higher. This kind of a support is made by setting a strong stake, or small post, at each end of the row; a heavy galvanized wire is attached to a post by one end, and the other is fastened to a piece of $\frac{1}{4}$ -inch iron rod, upon which a screw thread is cut; this rod passes through the other post, a nut put on, by the turning of which the wire is tightened; a washer is put between the nut and the post. The vines are tied to the wire.

For Grape Trellises in a small vineyard, we prefer the upright wires. Posts are set 8 feet apart, a strip $2\frac{1}{2}$ inches wide nailed on a foot from the ground; a corresponding strip nailed above this at the top of the posts; the distance (and height of the posts also) being governed by the length one chooses to grow the canes; some have it but 3 feet, others 4 feet, or more. The arms of the vine are fastened to the lower strip, and a perpendicular wire, fastened by a twist to the lower and upper strip, is placed for each shoot. When one wishes to train his vines in this manner, this is an excellent trellis. But a grape vine is so tractable that it will accommodate itself to almost any situation, and supports should be made ready in advance, and if to be painted, this may be done before hand.

Kitchen and Market Garden.

The difficulties in keeping stored roots, where unusually mild weather has prevailed, have been alluded to; this weather must also unfavorably affect

Plants in Cold-Frames, which have thus far required the sashes but a few days this season, and it has been almost impossible to maintain the dormant state so necessary to their proper wintering. Beyond thorough exposure, and shading where practicable, during sunny days, the gardener can do nothing to counteract the weather.

Hot-Beds, for starting early plants, will be required in the warmer States. The rule is to make the bed six weeks before it is usually safe to set plants in the open ground; consequently the earlier the season opens in any locality, the sooner should this preparation be begun. In these Notes for February of last year, the matter was treated in full detail. Our space now will allow of only a brief summary.

Cold-Frames and Hot-Beds are the same in all respects, save that the latter is warmed by a layer of fermenting manure. In an article on Cauliflowers, page 63, Mr. Henderson sufficiently describes a cold-frame. It is used for keeping cabbages, lettuce, and other nearly hardy plants, through the winter, and to forward plants in the manner referred to in the article. Besides these, the frame may be used for sowing seeds, and though the results will not be so early as in a hot-bed, some weeks may be gained. By exposure to the sun during the day, and covering the sashes before the heat declines in the afternoon, the interior can be kept quite warm. For a hot-bed

Sashes, Frame, and Manure are needed. The usual size of sash, 3 x 6 feet, with five rows of 6 x 8 glass, set in rabbeted bars, which run lengthwise—there being no cross bars, but the glass is lapped about $\frac{1}{2}$ inch, without putty at the lap. These sashes are sold at the factories glazed or unglazed. The frame is built in a pit, $2\frac{1}{2}$ feet deep, 6 feet wide, and of a length to hold the number of sashes. The pit is lined with rough boards, nailed to posts, and which extend above the surface of the ground a foot at the rear and 4 to 6 inches at front. Slats should be provided from front to rear where each pair of sashes meet, to guide the sashes and to hold them when pushed part way down.

The Manure may be all stable manure, or mixed with one-half more or less of leaves. It should be in a heating state, and put into the pit with coarse and fine equally distributed, beating the layers down with the fork, and when full, tramp the manure down level. Spread on 6 inches of rich soil (put under cover last fall), and place the sashes.

Sowing the Seeds.—The heat of the bed will at first be too violent, and the seeds must not be sown until it declines; when the thermometer shows about 80° it will be safe to sow the seeds, which should be in rows 4 inches apart, and running from front to rear. . . . We prefer

Sowing Seeds in Boxes, or flats, which are wooden trays about 2 inches deep, with bottom and sides securely nailed. They are made from soap-boxes and similar packages, one of which will make two or three. Where these are used, only 2 or 3 inches of soil are placed on the manure, and the boxes, in which the seeds are sown, are set upon this.

Care of the Bed must be thorough, as the neglect of a few hours will ruin all. The temperature should be kept as near 75° as possible; this is maintained by tilting or pushing down the sash when too warm, covering on cool nights; shading on hot days. Besides this care, which will be needed each morning and evening, and oftener in sudden changes, the plants must be watered, the soil stirred between the rows, and be thinned if too thick.

Window Boxes answer nearly all the purposes of a hot-bed for a family garden, in which the number of plants required is small. The boxes, or flats, already referred to, or other convenient box, will answer. A kitchen window is preferable to any other, as the air is usually more moist. Sow seeds in such window boxes, and when the plants are up, turn the boxes every day, to bring the opposite side to the light, and keep them from growing to one side. When the seedlings get two or three "rough" leaves, those beyond the seed-leaves, they should be "pricked out" or planted in other similar boxes, setting them an inch or more apart, according to kind. The young plants may grow in these

until time to put them in the open ground. Set the box out doors in the middle of every mild day, or open the windows, in order to harden the plants.

The Kinds Usually Sown in hot-beds, frames, and window boxes, are cabbages, cauliflowers, and others of that family; lettuce, tomatoes, peppers, and egg-plants; the last two will do a month later. Cucumbers, melons, and early squashes, may be started later, a few seeds to give plants enough for a hill, in a small box or 4-inch pot. The roots of these are large, and do not succeed in a small pot.

What to Sow.—We have in former years given a list of varieties that our experience has shown to be quite satisfactory; this year Mr. Henderson gives on page 62 his experience, which is much the same as ours. We always advise sowing the main crop of well-tested varieties, and while we advocate the testing of all the new things that one can afford to try, we regard it as highly unsafe to depend upon untried novelties for the family supply.

Where to Buy.—Look through our advertising pages, and send for catalogues. We do not commend one dealer in preference to another. We believe that all whose advertisements are admitted, will do as they agree. The low rates of postage on seeds, makes it unnecessary to regard locality; the distant purchasers can easily reach dealers, wherever they may be, and vice versa.

Seeds on Hand should be carefully looked over; while some are just as good as ever at the end of several years, others have a limited vitality. Onions, leeks, and parsnips should always be of the former season's growth. Beans, peas, egg-plant, carrot, okra, pepper, salsify, sage, and other sweet herbs, keep safely for two years. Radish, spinach, and parsley, are good at three years old. Cabbage, and all of its tribe, including turnips of all kinds, and celery, keep perfectly well for four years. Others seem to be quite as good at the end of five or ten years, as at first, such as melon, squash, and all that family, with beets and tomatoes. When in doubt about any seed, test it before time for sowing. Count out a dozen or twenty seeds, and sow them in a little earth in a cup, placed in a warm place, and the earth kept moist. If half or two-thirds sprout, it will be safe to sow the seeds.

Implements, Fertilizers, and whatever else is to be purchased, should be on hand before the hurry of the spring work begins....Get bean-poles and pea-brush before vegetation starts....Have extra parts to all implements liable to be broken.

Flower Garden and Lawn.

So much space has been given to other departments, that we may only say as to this that all preparatory work, such as planning new lawns, paths, and borders and selection of trees and shrubs for planting, should be done while there is yet leisure....Ornamental trees of all kinds, but especially evergreens, should be guarded against injury from heavy snow falls, by shaking the snow from the tops, and digging it away from the lower branches.

Greenhouse and Window Plants.

The increasing sun will bring many plants into flower, and at the same time encourage the insects, for the treatment of which quite full Notes were given in December last. Free use of tobacco smoke or tobacco water, where it is inconvenient to use smoke, will destroy many. A small collection of plants, tended by one really fond of them, may be kept free of insects by mere "thumb and finger work." Daily examination, the use of a stiff brush, like an old tooth-brush, and a pointed stick to pick off mealy bugs and scale, will keep insects from doing harm. Neglect to examine in time, and nip the trouble in the bud, is the cause of much of the difficulty. More water will be needed by plants in bloom and making their growth....Bulbs, if any remain in the cellar, may be brought to the heat and light. When the flowers fade on the earlier ones, cut away the stalk and let the leaves grow on; when they begin to fade, dry off the bulbs, which may be planted in the garden afterwards.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Jan. 12th, 1878, and for the corresponding month last year, and also for the year ending Dec. 31, 1877:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's this m'th	397,000	3,931,000	2,465,000	181,000	416,000	546,000
25 d's last m'th	473,000	4,116,000	3,491,000	383,000	1,312,000	1,407,000

SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's this m'th	313,000	4,104,000	3,513,000	159,000	311,000	839,000
25 d's last m'th	491,000	5,129,000	4,151,000	481,000	1,277,000	1,286,000

Comparison with same period at this time last year.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1878.	397,000	3,931,000	2,465,000	181,000	416,000	546,000
25 days 1877.	207,000	791,000	904,000	92,000	227,000	517,000

SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 days 1878.	343,000	4,104,000	3,513,000	159,000	311,000	839,000
25 days 1877.	291,000	2,333,000	1,469,000	50,500	230,000	601,000

3. Stock of grain in store at New York.

4. Receipts of Breadstuffs in New York in each of the last nine years :

Nov. 5, 1877. <td>2,984,374</td> <td>2,643,500</td> <td>166,919</td> <td>968,429</td> <td>1,770,759</td> <td>328,888</td>	2,984,374	2,643,500	166,919	968,429	1,770,759	328,888
Oct. 5, 1877. <td>288,038</td> <td>2,975,838</td> <td>28,326</td> <td>99,016</td> <td>881,395</td> <td>370,166</td>	288,038	2,975,838	28,326	99,016	881,395	370,166
May 2, 1877. <td>761,681</td> <td>468,809</td> <td>193,016</td> <td>174,375</td> <td>317,881</td> <td>291,651</td>	761,681	468,809	193,016	174,375	317,881	291,651
Feb. 7, 1877. <td>3,063,819</td> <td>2,302,261</td> <td>374,142</td> <td>671,114</td> <td>656,111</td> <td>388,605</td>	3,063,819	2,302,261	374,142	671,114	656,111	388,605
Jan. 8, 1877. <td>3,063,819</td> <td>3,077,504</td> <td>341,750</td> <td>905,615</td> <td>1,088,104</td> <td>425,408</td>	3,063,819	3,077,504	341,750	905,615	1,088,104	425,408
Dec. 1, 1876. <td>3,110,253</td> <td>3,385,534</td> <td>218,341</td> <td>873,810</td> <td>1,182,332</td> <td>512,041</td>	3,110,253	3,385,534	218,341	873,810	1,182,332	512,041
Aug. 7, 1876. <td>2,831,299</td> <td>904,557</td> <td>91,960</td> <td>58,914</td> <td>1,232,895</td> <td>434,208</td>	2,831,299	904,557	91,960	58,914	1,232,895	434,208
Apr. 10, 1876. <td>3,393,074</td> <td>232,140</td> <td>68,129</td> <td>200,381</td> <td>706,282</td> <td>436,942</td>	3,393,074	232,140	68,129	200,381	706,282	436,942
Jan. 10, 1876. <td>5,302,293</td> <td>663,982</td> <td>100,711</td> <td>325,191</td> <td>1,050,300</td> <td>307,438</td>	5,302,293	663,982	100,711	325,191	1,050,300	307,438

4. Receipts of Breadstuffs in New York in each of the last nine years:

1869....	3,535,716	23,813,652	11,666,784	357,803	3,007,958	8,747,322
5.	<i>Exports from New York, Jan. 1 to Dec. 31.</i>					
	<i>Flour.</i>	<i>Wheat.</i>	<i>Corn.</i>	<i>Rye.</i>	<i>Barley.</i>	<i>Oats.</i>
1877.	1,537,106	21,335,774	25,373,942	2,049,796	2,412,509	257,631

5. Exports from New York, Jan. 1 to Jan. 31.

1877....	1,587,106	21,335,774	25,373,912	2,019,796	2,412,509	257,634
1876....	1,891,158	21,227,852	15,991,817	1,337,164	88,132	619,551
1875....	1,951,189	26,192,698	12,988,740	201,893	1,505	138,752
1874....	2,177,608	31,591,249	19,000,995	611,661	3,509	122,528
1873....	1,655,331	19,141,559	15,587,527	1,019,148	19,376	49,710
1872....	1,729,050	18,141,559	27,381,000	688,577	22,676	39,480
1871....	1,639,753	21,908,643	13,046,570	523,752	98,745	47,310
1870....	1,950,231	18,146,035	487,792	92,431	—	28,986
1869....	1,583,211	18,210,586	1,637,586	112,512	—	49,393

6. *Exports from New York, Jan. 1, to Jan. 10.*

6. Exports from New York, Jan. 1 to Jan. 10.

Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.
bbls.	bush.	bush.	bush.	bush.	bush.	bush.
1878.	47,039	740,757	320,123	27,587	1,298	3,798
1877.	39,120	466,708	42,295	7,981	4,285	18,143
1876.	71,713	521,558	453,833	2,810	6,183	32,093
1875.	67,408	732,422	481,372	—	4,719	5,095

Gold has been up to 103½, and down to 102½, closing Jan. 12, at 102½, as against 103 on Dec. 12; 102½ on Nov. 12; 103 on Oct. 12; 105½ on July 12; 104½ on June 12; 107½ on May 12; 104½ on March 12; 106 on January 12, 1877....The Breadstuffs interests have suffered from various adverse influences during the month, and have shown serious depression, on a restricted volume of business, as well for home use as for export, closing heavily. Reports and rumors—especially toward the close—as to the probabilities of a restoration of peace in Europe, have been decidedly against the outward movement, which has also been unfavorably affected by the stronger range of ocean freights. Flour sales fell off to a very limited aggregate. Spring Wheat and new crop Corn closed moderately active at the reduced quotations. Winter Wheat generally dull, and quoted irregular. Within the month comparatively liberal export purchases have been made of choice White Wheat, and best No. 1 Spring, the latter in especial favor with buyers. Oats have been less freely dealt in, and left off weak. Rye and Barley have attracted less attention. The export call for Barley has been within narrow limits....A further material decline has occurred in Hogs and Hog Products, bringing prices down to the lowest prices in many years, influenced by the very free offerings here and at prominent points in the interior, particularly Chicago. At the reduced quotations, dealings have been on an extensive scale—in Lard and Bacon remarkably so for export. Beef and Beef Hams have been quoted about steady, but not active. Choice to fancy grades of Butter have been in good request at stronger rates; poorer qualities slow of sale and unsettled as to price. Cheese has been in fair demand at about former figures. Eggs have fallen off materially in price, closing weak; recent arrivals in excess of current requirements, and supplies accumulating....An active business has been reported in Hops, largely for export, within the quoted range....Cotton has been less freely dealt in at variable prices....Wool in fair demand, and held with confidence....Tobacco moderately sought after at about previous rates....Seeds generally quiet; rough flax wanted; values quoted, as a rule, steady. The exports of Clover Seed from this port, from Sept. 1 to Dec. 31, 1877, were 23,184 bags; and of Timothy Seed, 29,095 bags....Hay and straw have been in moderate demand, and prices have been fairly supported....A fairly active movement has been reported in Ocean and general cargo

freights, though checked, in part, by the stronger rates claimed by shipowners....Grain rates by steam to Liverpool closed on the 12th of Jan. at 9½d. to 9¼d.; to Glasgow at 9½d.; to London at 9½d.; to Bristol at 9½d.; to Hull at 9½d.; to the Continent at 9½d. to 10d.; to Liverpool, by sail, 8d. 8½d.; London, by sail, 8½d., per bush. Flour to Liverpool, by steam, 2s. 9d.; London, by sail, 2s. 9d., and by steam 3s. 6d. to 3s. 9d.; Bristol, by steam, 3s. 6d. per bbl. Provisions by steam to Liverpool, 40s. at 45s. per ton; Cotton by sail 1½d. to 1¼d., and steam at 1¼d. to 1½d. Grain, by sail, for Cork and orders, at 6s. 3d. to 6s. 4½d., and to Continental ports, 6s. 3d. to 6s. 6d.; Italian ports, 5s. 7½d. to 5s. 10½d. per quarter; to Lisbon, in ship's bags, 16 cts. per bushel; to Oporto, in shippers' bags, 7s. 3d. per quarter.

CURRENT WHOLESALE PRICES.

	Dec. 12.	Jan. 12.
PRICE OF GOLD.....	103	102 1-2
Flour—Super to Extra State	\$4 85 @ 6 00	4 35 @ 5 75
Super to Extra Southern.....	4 90 @ 8 75	4 50 @ 8 50
Extra Western.....	5 45 @ 9 75	5 00 @ 9 75
Extra Genesee.....	6 00 @ 7 50	5 00 @ 7 25
Superfine Western.....	4 85 @ 5 35	4 35 @ 5 10
Rye Flour.....	3 65 @ 4 35	3 25 @ 4 35
CORN—Meal.....	2 60 @ 3 25	2 60 @ 3 25
BUCKWHEAT, per bush.....	2 30 @ 2 75	2 00 @ 2 65
BUCKWHEAT, per bush.....	68 @ 69	61 @ 65
WHEAT—All kinds of White.....	1 42 @ 1 50	1 40 @ 1 52
All kinds of Red and Amber.....	1 15 @ 1 50	1 00 @ 1 48
CORN—Yellow.....	58 @ 66	56 @ 63
Mixed.....	57 @ 65	55 @ 63
White.....	55 @ 66	51 @ 64
Oats—Western.....	38 ½ @ 43 ½	37 @ 43
State.....	39 @ 44	38 @ 43
RYE.....	72 @ 78	71 @ 77
BARLEY.....	70 @ 1 08	65 @ 1 05
BARLEY MALT.....	70 @ 1 25	70 @ 1 20
HAY—Bale, per 100 lbs.....	40 @ 95	40 @ 95
STRAW, per 100 lbs.....	35 @ 65	40 @ 65
COTTON—Middleings, per lb.....	11 ½ @ 11 ½	11 ½ @ 11 ½
HOPS—Crop of 1877, per lb.....	5 @ 13	5 @ 13
Old, per lb.....	2 @ 6	2 @ 6
FEATHERS—Live Geese, per lb.....	45 @ 50	45 @ 50
SEED—Clover, West. & St. per lb.....	8 ½ @ 8 ½	8 @ 9
Timothy, per bushel.....	1 35 @ 1 40	1 35 @ 1 40
Flax, per bushel.....	1 50 @ 1 52 ½	1 55 @ 1 60
SUGAR—Refined & Grocery, per lb.....	6 ½ @ 9	6 ½ @ 8 ½
MOLASSES, Cuba, per gal. 50 test.....	38 @ 40	Nominal.
New Orleans, per gal.....	32 @ 48	30 @ 48
COFFEE—Rio de Janeiro, per lb.....	16 @ 20	15 ½ @ 18 ½
TOBACCO, Kentucky, per lb.....	4 @ 15	4 @ 15
Seed Lard, per lb.....	4 @ 50	4 @ 50
WOOL—Domestic Fleeced, per lb.....	26 @ 55	28 @ 52
Domestic, pulled, per lb.....	28 @ 38	20 @ 40
California, spring clip, per lb.....	12 @ 31	13 @ 32
California fall clip, per lb.....	10 @ 25	10 @ 23
TALLOW, per lb.....	7 ½ @ 7 ½	7 @ 7 ½
OLD CORK, per ton.....	31 00 @ 32 00	12 @ 32 00
PORK—Mess, per barrel.....	13 12 ½ @ 13 50	12 00 @ 12 50
EXTRA Prime, per barrel.....	9 00 @ 9 50	8 00 @ 10 00
BEEF—Extra mess., per lb.....	13 00 @ 13 50	12 50 @ 13 00
LARD, in tins, & bbls, per 100 lb.....	8 12 ½ @ 8 90	7 62 ½ @ 8 25
BUTTER—State, per lb.....	12 @ 35	12 @ 35
Western, poor to fancy, per lb.....	9 @ 35	9 @ 38
CHEESE.....	9 @ 13	5 @ 33 ½
EGGS—Fresh, per dozen.....	30 @ 20	15 @ 100
POULTRY—Fowls & Chickens.....	8 @ 14	7 @ 15
Turkeys—per pair.....	7 @ 16	10 @ 14
Geese, per pair.....	1 12 ½ @ 2 00	1 25 @ 2 00
Ducks, per pair.....	50 @ 75	60 @ 90
Roosters, per lb.....	6 @ 7	5 @ 7
DUCKS, Wild, per pair.....	25 @ 2 50	35 @ 2 50
GOOSE, per pair.....	50 @ 1 00	70 @ 1 25
PARTRIDGE, per pair.....	50 @ 1 00	50 @ 1 00
QUAIL, per dozen.....	75 @ 1 50	1 50 @ 2 50
PIPER, per doz.....	1 25 @ 1 37	Nominal.
SNIP, per doz.....	30 @ 1 37	Nominal.
VENISON, per lb.....	7 @ 12	Nominal.
RABBITS, per pair.....	40 @ 50	40 @ 50
HARES, per pair.....	25 @ 30	30 @ 50
TURNIPS, per bbl.....	60 @ 75	65 @ 75
CABBAGES, per 100.....	2 00 @ 3 00	2 75 @ 4 50
Red.....	2 50 @ 4 00	2 50 @ 4 00
ONIONS—New, per bbl.....	1 50 @ 2 00	1 25 @ 1 75
LETTUCE, per bbl.....	50 @ 1 00	Nominal.
CARROTS, per bbl.....	50 @ 75	75 @ 1 00
POTATOES—per bbl.....	1 25 @ 2 12 ½	1 25 @ 2 00
SWEET POTATOES—per bbl.....	1 50 @ 2 50	1 50 @ 2 50
BEETS, per bbl.....	50 @ 75	50 @ 75
PEAS—Canada, in bond, per bu.....	85 @ 85	82 @ 83
green, per bush.....	1 40 @ 1 45	1 30 @ 1 35
BRANS—per bushel.....	1 70 @ 2 65	1 60 @ 2 75
BROOM-CORN.....	4 @ 7 ½	4 @ 7 ½
APPLES—per barrel.....	1 75 @ 5 00	1 50 @ 3 75
CELERY, per dozen.....	75 @ 1 00	60 @ 75
CAULIFLOWER, per bbl.....	1 00 @ 3 50	1 25 @ 3 00
OKRA, per 100.....	15 @ 20	15 @ 20
PEANUTS, domestic, per bush.....	1 15 @ 1 50	1 45 @ 1 60
GRAPES, per lb.....	40 @ 7 ½	40 @ 7 ½
CRANBERRY, per bbl.....	5 00 @ 6 50	5 50 @ 6 50
per crate.....	— @ —	75 @ 2 00
ORANGES, Florida, per bbl.....	5 00 @ 8 00	5 00 @ 9 00

New York Live-Stock Markets.

WEEK ENDING	Bees.	Cows.	Culres.	Sheep.	Swine.
Dec. 17.....	8,034	93	1,135	26,850	47,674
Dec. 24.....	8,838	71	1,261	17,120	29,086
Dec. 31.....	6,334	89	582	11,917	31,953
Jan. 7.....	8,119	68	973	24,383	37,527
Jan. 14.....	10,427	77	818	25,808	48,436
Total for 5 Weeks.....	42,052	389	4,769	106,008	194,676
do. for prev. 4 Weeks.....	35,901	314	4,531	95,222	142,851

Bees.—The dullness of the market was never greater than at the close of 1877. The depression in general business, and the decreased consumption of beef is shown by the condition of the market. Formerly a matter of 200 to 250 cars of bees a day made no impression on prices, but sales briskly cleared the yards. The first week of 1878 offered a wonderful contrast, 13 cars one day, and 38 the next, barely met the demand, and when a few more cars arrived the next day after, down went prices. Fine, dry weather, and small receipts put up prices ½c. per lb., but the heavy receipts of the last week knocked the strength out of the market, and the advance was lost. The market closed very weak; some

good Colorado steers of 1,500 lbs., selling at 9¢. to dress 56 lbs. to the cwt.; good natives for 10¢. to 10½¢. per lb., 57 lb. to the cwt., and extra at 11¢. to 11½¢. for 58 lbs. to the cwt.

The prices for the past five weeks were as follows:

WEEK ENDING	Range	Large Sales.	Aver.
Dec. 17.....	8½¢ to 13 c.	9 @ 11 c.	9½¢ to 10 c.
Dec. 21.....	7½¢ to 12 c.	8½¢ to 11 c.	9½¢ to 9¾¢.
Dec. 31.....	8 @ 12 c.	9 @ 10½¢.	9½¢ to 9¾¢.
Jan. 7.....	7½¢ to 12 c.	9½¢ to 10½¢.	9 @ 10 c.
Jan. 14.....	7½¢ to 11½¢.	9 @ 10½¢.	9½¢ to 9¾¢.

Cows.—Good cows are in demand, and sell quickly at \$60 to \$90 for extra good milkers; fair cows bring \$50, and poor from \$30 to \$40 per head. Poor cows have sold with difficulty.... **Calves.**—The crowding on the market of unsalable stock has reduced prices very low. At one time the past month 2½¢. per lb. only was paid for grassers. Hog-dressed veals have been in good demand, and sell for 8¢. to 9¢. per lb.; poor veals sold for 5¢. to 6¢. per lb. live weight, and grass calves could hardly be moved at 2½¢. per lb. live weight at the close of our report....

Sheep and Lambs.—The market for this stock may be called dead; killed by overstocking. A great many sheep are carried over unsold. The only bright day during the month was when only 800 arrived and sold quickly at 4¢. per lb. advance on former rates. Heavy arrivals put the market back again. A notable example of extremes was offered by the exhibition of some poor Texans of 63 lbs. average, which sold for 2½¢. per lb., and some Canada Sheep of 160 lbs. average, some weighing 300 lbs., which sold for 6½¢. per lb. The market closed very weak at 4½¢. to 6¢. per lb. for fair to good sheep, and 7¢. per lb. for lambs, live weight.... **Swine.**—Dulness rules the trade. Some days no sales are reported, and prices are nominal. As we close this is the case for live hogs, quoted only at 4½¢. to 4¾¢. per lb. City dressed sold very low to move them; 4½¢. to 5½¢. per lb., was all that could be procured. Western dressed are held but not sold at 5¢. Jersey dressed slow at 5 to 6½¢. per lb.

Prices of Feed.

Bran, per ton.....	\$18.00 to \$20.00
Middlings, per ton.....	19.00 to 21.00
Ground Feed, per ton.....	15.00 to 21.00
Linseed oil-cake, western, per ton.....	41.00 to 47.00
Cotton-seed-cake, per ton.....	25.50 to 40.00
Chandler's Scraps, per lb.....	3¢ to 4

Prices of Fertilizers.

No. 1. Peruvian Guano 10 p. ct. ammonia, standard, per ton.....	\$56.50
do. do. Lobos, do. do.....	47.50
do. do. guaranteed, per ton, cargo F.....	56.00
do. do. rectified, per ton, 9.70 p. c. e.....	69.00
do. do. do. do. do. 3.40 p. c. e.....	51.00
Soluble Pacific Guano, per ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone.....	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs.....	26.14
do. Spring Wheat Manure, per 1,000 lbs.....	25.00
do. Fruit and Vine Manure, do.....	17.50
do. Bone, strictly pure, meal, extra fine, per ton.....	42.00
do. do. do. fine, do.....	40.00
do. do. do. medium, do.....	36.00
do. do. Lawn Top Dressing.....	60.00
do. Potato Manure, (Ville formula).....	51.94
Stockbridge Corn Manure, (Boston) per acre.....	22.00
do. Potato do do do.....	12.00
do. Tobacco do do do.....	60.00
do. Rice do do do.....	11.00
do. Wheat do do do.....	16.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Sulphate of Magnesia (55 to 60 per cent), per ton.....	22.50
Gypsum, Nova Scotia, ground, per ton.....	8.00
Nitrate of Potash (95 per cent.), per lb.....	9½¢
Sulphate of Potash (actual potash 41 per cent) per lb.....	4 c.
do. do. (actual potash 27½ per cent) per lb.....	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton).....	\$18.00
Nitrate of Potash (actual potash 50 per cent), per lb.....	2½¢
Nitrate of Soda, per lb.....	4½¢ to 4¾¢
Sulphate of Ammonia (25 per cent.), per lb.....	4½¢ to 5 c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton.....	\$50

Export of Farm Products in 1877.

The condensed, but very comprehensive tables on page 45, are prepared expressly for the *American Agriculturist* by a gentleman who daily, throughout the year, attends the N. Y. Corn Exchange to gather information, prices, etc. These tables will be found very interesting. The 5th table will be disappointing in the amount of exports of Breadstuffs. The exports of wheat and flour were less in 1877 than in 1876, notwithstanding the large yield of 1877, owing to the high rates maintained by speculators, and the holding back the crop for increased prices by the producers themselves. Should the war in Europe soon close, prices will probably fall. There is, however, a notable increase in the export of corn (nearly 10,000,000 bushels), also in Rye and Barley. There has been also a considerable increase in the shipment of Wheat and Flour since January 1, as compared with last year.

From May 1st, 1877, to January 11th, 1878, the export of BUTTER from N. Y. amounted to 16,471,407 lbs., against 10,193,300 lbs. for the same period the previous year.—CHEESE, 109,274,566 lbs., against 75,348,082 lbs. the previous period.

FRESH BEEF exports during 1877, from New York, Philadelphia, Boston, and Portland, Me., 101,971,501 lbs., valued at \$10,047,609.—LIVE CATTLE exported from same places in 1877, 20,057 head, valued at \$2,987,540. Total value of cattle and beef, \$13,035,239. Pounds of MUTTON, 2,114,240; value \$119,500. Live Sheep 13,176 head; value \$63,960. Total Export from four Ports, of live and dressed (fresh) Beef and Mutton in 1877, \$13,218,699. An increase of more than 600 per cent over any previous year.

DON'T FORGET THE GOOD PREMIUMS To be Got Without Money.

Let it be Remembered by all our Friends, that notwithstanding the offer of the fine Microscope to our Subscribers, as elsewhere described, our List of Valuable and Useful Premiums, is still in Full Force, and there is yet plenty of time for thousands to secure, by a little effort, one of these Good Things that have already delighted multitudes who have received them. **Begin Now.** This month of February is a capital time. If you have not received our Illustrated Premium List, please send for it. (See p. 73.)



containing a great variety of items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, \$1.00 a year; Two Copies, \$3; Three Copies, \$4.20 (\$1.40 each); Four Copies, \$5.20 (\$1.30 each); Five to Nine Copies, \$1.25 each; Ten to Nineteen Copies, \$1.20 each; Twenty Copies and upwards, \$1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.... Remittances, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or any full year, sent unbound, for \$1.60.... **Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

The German American Agriculturist is receiving large subscriptions from every quarter, indicating that the additions and improvements made in it are being recognized and appreciated. It is the only purely German Agricultural paper in the United States, and we intend, with the assistance of our English readers, to at least double its circulation during the present year. Please make known to your German neighbors the merits of the English *Agriculturist*, and that they can for the same price have the German edition, which contains all the engravings and valuable articles of the English edition, with the addition of a valuable Special Department, edited by the Hon. Fred. Münch.

Provide for Seed, Implements, Plants, etc., NOW.—It is bad planning to wait until just as anything is wanted, before securing it. This comparatively leisure month is the time to calculate what is going to be needed in April and May, to study up the advertisements and see what is offered: to correspond with dealers, get their catalogues and prices; to make up orders and dispatch them, and fix the time you want them surely on hand—putting the time far enough in advance to have no delay occur by freshets, bad weather, or accident, and get a positive promise that the order will be filled. The dealers will be better prepared with good articles, and taking time by the forelock, will be a great gain. See "Hints for Work," p. 42.

A Flea "as large as an Ox."—Our ideas of the size of a thing are wholly by comparison. The moon, when seen out in the clear sky, appears no larger than an 8 or 10 inch ring or disk. When just rising from the horizon, where it is seen in comparison with objects on the earth, it often looks to be twenty to fifty feet or more in diameter. The other day a gentleman called to say that our Microscope surely did not magnify 25 diameters, or 625 surfaces. Having two glass slides, each containing a dried specimen of a flea, we put one of them under the springs in his Microscope, and asked him to hold it up to the light, and say how large it looked.—

"About as large as a pig," he answered. We then held the other slide up near the Microscope, and asked him to look at this with the unaided eye, and at the one in the Microscope, alternately, a few times, and then asked how large the magnified one now looked.—"As large as an Ox," he promptly answered, and departed abundantly satisfied as to our statement of its magnifying power.—So well satisfied was he that he subscribed for five copies of the paper and five Microscopes to be sent to his friends. Any one can test this question by using two small transparent objects of about the same size, one in, and the other outside of, the Microscope.

Value of Devon Cattle.—The value of Devon cattle is again ascending. It was not to be believed that a favorite, excellent, and old-established breed could long remain in neglect, or become permanently unpopular. Our advice long ago to those whose circumstances were favorable for keeping Devons, was to buy them while prices were unreasonably depressed. The depression seems to have passed away, and prices are advancing, if we may judge from recent sales. A sale of 3 cows and a bull was recently made by Ex-Gov. E. H. Hyde, of Conn., to Mr. H. U. Weed, of Stamford, in that State, at the price of \$1,000. The animals were Fairy 17th, (947,) age 7 years; Fairy 26th, (1622,) 4 years; Gertie, (1697,) 3 years, and the bull Huron, (727,) age 4 years.

Need of Veterinary Education.—The value of live stock in the United States amounts to over one thousand millions of dollars, the aggregate number of farm animals being as follows: Horses & Mules...11,149,800 | Sheep...35,935,300 Cattle...27,870,700 | Swine...25,726,800 No other country in the world approaches these figures. But no other country, rich in live stock, is so ill provided with veterinary assistance as we are. Practically all this vast number of animals is without medical care, for the few practiced surgeons are entirely insufficient to the care of one-thousandth part of them. Millions of dollars are sacrificed yearly for want of competent medical assistance for cattle when ill. Veterinary schools are needed, and hundreds of competent practitioners.

Read the Advertising Columns.—We have several letters now before us, asking where pigs, fowls, seeds, fertilizers, machinery, etc., can be procured. We consider all the information of this kind that is given in the advertising pages sufficient, if those needing anything will only look there; and can not find room to repeat what is already plainly told elsewhere. Every page of the *American Agriculturist*, including the covers, is interesting reading, and should all be carefully examined every month. In addition to looking after what one may want, the reading of what others have to say, in offering their wares, etc., usually starts up some new idea in the mind of the reader.—When writing to any advertiser, always tell him in what paper his advertisement was seen.—Live animals can now be sent by express, for hundreds of miles, as well as merchandise.

Live Stock in Iowa.—The State Auditor, of Iowa, publishes a statement, showing the number and assessed value of the live stock in that State for the last ten years. This very interesting document gives a clear view of the steady increase of the wealth of Iowa in cattle, as well as the surprising decay of sheep growing. We give the figures for 1867 and 1877 as follows:

1867.	Value.	1877.	Value.
Cattle...683,109..	\$8,628,941	Cattle...1,452,546	\$14,898,841
Horses...343,593..	16,532,925	Horses...639,385..	20,100,263
Mules...17,237..	1,125,410	Mules...42,887..	1,670,154
Swine...776,412..	1,483,245	Swine...1,654,708..	3,899,301
Sheep...1,354,608..	2,084,476	Sheep...318,439..	345,827

Sore Feet on Cows and Calves.—"G., Grantland, Va. Cows are sometimes subject to a sort of fever known as aphthous, which is marked by an eruption of vesicles, or small blisters upon the feet, and between the claws of the hoof, and about the mouth and tongue. This disease is somewhat allied to the so-called "foot and mouth" disease prevalent in Europe, but is not nearly so malignant in this country as there. The cure is to wash the feet with soap and water, and apply tar, or a mild solution of carbolic acid in water, to the parts affected; and to give at the same time half an ounce of hyposulphite of soda daily to a cow, or half as much to a calf for a week or two, until the blood becomes healthful.

Good Corn and Flour Cake.—At the house of a friend this morning, we had some corn-bread, so-called, which was very palatable, and, as usual, we asked the "particulars" for our readers. It proved to be half flour, viz., one quart each of corn-meal and wheat flour; two beaten eggs; one tea-cup molasses; one tea-spoonful of soda mashed fine. Mix all together with sweet milk, soft, and bake in a quick oven. The "quick oven" generally has much to do with producing good cake or bread, if not too quick to spoil the crust.

About the Microscope.

Sundry Notes.

I.—Disappointment.—An occasional note of disappointment comes from some one who has not got into the way of using his Microscope, so as to understand and appreciate its real value. To such we will say that it is all and more than we have promised for it, or about it, and we hope they will persevere in learning how to use it until it becomes, what it ought to be, and can be, to all, a most valuable, most interesting, and most useful instrument. We know it may be made to every person, worth ten-fold the entire cost of both the Microscope and this Journal for a year, and in this we are confirmed by the united testimony of many scientific men and others, who have had long experience with microscopes of various grades.—To help the uninitiated, we first sent out a six-page description of its use. After the first few thousand, we added another slip with more minute simple directions (partly printed in Jan. No., page 9). Now we send with each Microscope a combination of both sheets and other additions, in a 14-column sheet. Let any one still failing to make good use of the Microscope, send for this 14-column sheet, if he has not received either this or the first two. See page 66.

II.—Delay in Sending Them.—Despite the constant pressing of the work at the manufactory, and the employment of all the careful help we can make room for, in dispatching the instruments, the care and labor required to send them accurately, with the multitudes of directions to pick out of subscriber's letters ordering them (often quite obscure and uncertain in specific directions), we have been from two to six days behind in filling several of the orders. Though we shall now keep pretty close up to daily orders, we ask our readers to always allow us a leeway of say 8 or 10 days from the reception of their letters to dispatch the instruments. Usually it will be but three or four days. The names and subscriptions must first be entered in the alphabetical mail books, next the paper mailed, and then the forwarders have to consult the express and other routes, pack them, enter them in two books, one for the express office, and take the receipts for them, etc., and this too, with calls for 800 to 1,500 a day.

III.—Who Can Have Them.—Every subscriber to the *American Agriculturist* for 1878 can have one of the Microscopes delivered free to him, in any part of the United States or Canada, on payment of 55 cents, or 40 cents if it be taken at the office, 245 Broadway. This is a good deal below the actual cost to us, but that we calculated upon at the start, though the expense and work is considerably more than we at first expected.

IV.—Through News Agencies.—Those who take their paper through News Dealers, can have the Microscope just the same as subscribers on our own books, if their news dealers will assure us that they have paid him for the paper through the year. We can not afford to supply it to those who take only an occasional number, or part of the Volume. In setting the price below the cost, it was based on a whole year's subscription.

V.—The Price to Non-Subscribers is invariably \$1.05, if delivered, or \$1.50 if taken at the office. Several who have larger microscopes, and have received one each as subscribers, have bought others at \$1.50 to be used by their children, by classes of pupils, etc., and call them very cheap. Such sales help out on the general expense.

VI.—A Loose Microscope—Remedy.—“*Paterfamilias*” writes: “....My large family of sons and daughters constitute a ‘Microscope Club’ of themselves, and keep the instrument in almost constant use. Continual wear has loosened the lens tube a little upon the upright shaft. How shall I tighten it?”—Press the tube in a little at any place, by inserting the point of a pen-knife between it and the rubber. Or, more simply, slip into the tube a very small fibre of silk, or cotton, obtained by untwisting and picking to pieces a bit of thread. The finest whole thread will be too large. Draw the fibre through the tube, and insert the upright.

VII.—A General Educator of the People.—A distinguished scientific gentleman, in a private note, says: “....Your Microscope is the finest thing in the way of a newspaper premium enterprise that I have ever seen. It will prove a general educator of the people, inciting them to observe and study the wonderful world of small natural objects everywhere around us, and lead them on to further investigation. It will thus not only awaken interest in an important way, but multitudes of cultivators will find it eminently useful in detecting causes of disease in plants and animals.”

Cross of Shorthorns and West Highland Cattle.—Mr. J. A. Cochrane, the well known breeder of Hillhurst Canada, has recently experimented with a cross of West Highland heifers with

Shorthorn bulls. The produce has been tested, and has been found very satisfactory. A steer 29 months and 10 days old was recently slaughtered; the live weight empty of food was 1,332 pounds, the dressed weight was 797 lbs. of beef; 73½ lbs. of hide, and 67 lbs. of tallow; total, 937½ pounds, or 73 lbs. to the 100 of live weight. While the weight is not equal to that of good specimens of the pure Shorthorn at that age, yet the small loss in dressing this half-bred proves it to be a very profitable cross. The steer was weaned at four months old, and since then was fed upon hay and turnips in the winter, and grass in the summer, until he was put up for stall feeding two months before he was slaughtered.

Progress of Settlement in Minnesota.—The St. Paul Chamber of Commerce issue a card containing statistics, prepared by the State Commissioner, by which is shown that the wheat crop for 1877 reached forty million bushels; the total assessment for 1850 was \$806,473, and in 1877 was \$218,855,743; there are 3,600 common schools, a school fund of 3½ millions of dollars, and the population, which was 5,330 in 1850, is now 675,000.

The Hessian Fly.—“J. A.” Henderson, Ky. The pest of the wheat plant is now operating destructively in many parts of the country. We hear of it in Michigan, Wisconsin, Canada, New York, Ohio, Pennsylvania, Tennessee, Kentucky, and localities between. It is a small two-winged fly, which lays eggs upon the leaf of the wheat in August or September. These eggs hatch into small white grubs, which descend to the base of the stalk, and there suck the juices, causing the wheat to turn yellow, or to die. Soon after the grubs change to pupae, very similar in color and shape to a flax seed, and these remain until spring, when they change to the mature fly. The fly then deposits eggs in May, but the larvae is too late to do much injury to the wheat. The “flax-seed” condition is entered in June, and in July the second brood of flies appear. The remedies are burning the stubbles immediately after harvest, or plowing them under deeply so as to destroy the pupae which may be in hiding; to sow late in the Northern States, so that the flies may have laid their eggs before the wheat appears above ground; rolling the young wheat, by which the eggs are crushed; sowing salt, soot, or fine lime upon the young wheat, by which the maggots are killed, and generally by good cultivation and fertilizing to stimulate the wheat so as to enable it to resist the damage.

The Travis Wheat Hoe.—“C. K. C.,” Oakland Co., Mich., sends the following statement of his experience:—I used a Travis wheat hoe on part of a field of winter wheat, early in May last. The field had already been harrowed, and clover seed sown on it. We hoed a strip through the field, leaving each side as it was. I have watched this strip closely during the summer. The ground on it was more soft and yielding, and the wheat had a ranker appearance. At harvesting we could see a plain difference. As we cut with the reaper directly across the strip, we could see that the straw was brighter and stronger, and the heads plumper than on either side. Our estimate was that it would yield twenty-five per cent more than the rest of the field. I believe it very important to give our wheat ground a thorough loosening in the spring, and if we ever equal the English farmers in producing wheat, we will have to resort to hoeing. The large yields of wheat of the last season demonstrates the fact that our soils will produce as large crops as theirs, if we give them a fair chance. I am satisfied that the hidebound condition of our wheat fields in the spring of the year, requires a thorough loosening, and the common harrow does not do it deep enough. Timothy seed had been sown with the wheat in the fall, and the hoeing did not seem to injure it.

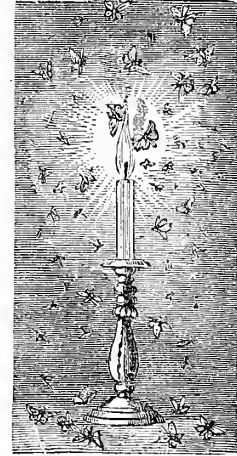
Pipe for the Conveyance of Water.—“A. C.,” Carroll Co., Md. To convey water 1,000 feet with a fall of five feet only, the pipe should be 1¼-inch in diameter the first 500 feet, and one inch for the remainder. If smaller, the outlet flow will be very small.

Malt Combs, or Sprouts.—“L. D.,” Lonsdale, R. I. The sample sent is malt combs, or the sprouts from malted barley and oats. This is from a mixed lot evidently, there being oats, barley, cockle, and seeds of foxtail grass mixed with the sprouts. The malt has probably been made from a very inferior quality of grain having oats, cockle, and foxtail mixed with it. Malt combs, when clean, are a very nutritious food for milk cows, and are cheaper at one cent a pound than bran at one cent and a quarter.

A House for 200 Fowls.—“W. R. M.,” Morris Co., N. J. To accommodate 150 to 200 fowls, it would be best to have two houses, or rather one so divided in the middle as to make two with a door at each end. A very cheap and good house may be made of boards: 4 feet high at the back, 10 feet in front, 16

feet wide, and 36 feet long. The roosts should be made at the rear, and in the form of a ladder, sloping back from the floor to the roof. In the middle there may be a room for nest boxes. If the front, which should face the south, is of glass, it will be much improved. As large a yard as possible may be provided, and fenced with lath, so that the fowls may be kept in when desirable. The materials for such a house need not cost more than \$30, and \$12 additional for sash for the front.

Sundry Humbugs.



The Editors, who do not, of necessity, know much about the business affairs of the paper, can judge fairly of the character of the subscriptions by the editorial correspondence. One of the straws which show that we are receiving many new subscribers, is the Humbug correspondence. If soon after the beginning of the year, we receive a large number of letters relating to humbugs that have been exposed long ago, we are quite sure that a great many persons make the acquaintance of the *American Agriculturist* for the first time, and gratified to learn of a quarter where their complaints will

be listened to, we at once find our humbug budget rapidly increasing. It does not matter that the great majority of these complaints have been already noticed, they are new to those who send them, and we are glad to see them, as one of the indications that we are receiving new subscribers and making new friends. The old circulars of

“A DECISION AT LAST,”

that variously worded story of a supplementary drawing, in which people get gold watches and lots of jewelry—by paying for them. We have heretofore mentioned “Russell & Co.,” and “Hetherington & Co.,” as being mixed up in a way we could not understand. In all the cases, so far as we recollect, the “Decision at Last” circulars say that the “Gold Watches” and “Jewelry” are to be had by paying the assessment to “Russell & Co.,” but many applicants would get letters from “Hetherington & Co.,” referring to the same business. Lately, there appears the firm of “Clark & Co.,” who write to a correspondent: “We have been appointed by the Finance Committee, instead of Messrs. Russell & Co., to Ship the Goods, collect the Percentage money, and forward it to New Orleans.” Can it be that, like Odello’s, “Russell & Co.’s”

“OCCUPATION’S GONE?”

Those who have had no tickets in the “Consolidated Lotteries”—and the great majority of those who receive circulars have none—need not care whether “Clark & Co.,” or “Hetherington & Co.,” are other names for “Russell & Co.,” or who is who, in the matter. Some persons—in the chance of getting for \$15 (or any other sum) “Gold Watches,” and lots of “Jewelry,” “valued at \$150,” (or any other sum)—are willing to admit the statement of the circular, that “the interest you held in one of the Lotteries represented by the Committee on Unclaimed Prizes, has resulted in your drawing” so and so. Now, every one knows whether he had or did not have an “interest” in one of these lotteries. If he had no ticket or “interest” in any lottery whatever, every honest man knows that the circular does not mean *him*, and there’s the end of it. If one is tempted to accept a statement (that he had an interest in some defunct lottery) which he knows is not true, and sends \$15 (or any other sum) to get Watches or Jewelry valued at \$150 (or other sum), and gets these—and afterwards finds that the articles are not worth the money he paid, he must go somewhere else for sympathy. He may be disappointed, but as he was willing to take advantage of a statement he knew was not true—the verdict of every honest man will be—“Served him right.”

“THE ROYAL DOMINION GIFT CONCERT”

is new as to time, but old as to wicked ways. Can there be any graduates from the “Wyoming” and “Topeka” swindles running the thing? Though it exists under an “effete monarchy” it has all the airs and graces of a Gr-r-r-eat and Glor-r-ious Republic. Just as those “Wyoming” and “Topeka” chaps did, so does this “R-r-oyal” thing. It sends a private (lithographed) letter, to people in the States, informing them, if they will send \$5, for a club of five tickets, their names are booked for a prize *sure pop*. They may find some Americans fool enough to play the part of “stool

pigeons" in their swindle, but we are glad to know of some cases in which "the putty did not stick." We have devoted more space than usual

TO LOTTERY SCHEMES,

as they are the most fascinating of all forms of humbug. Many think that they are fairly conducted games of chance, and if they invest, they only "take their chances" with the others—while the fact is they have no chance at all. These lotteries are rotten through and through, and the prizes pretended to be drawn, are generally "put up jobs," and given out merely as bait to catch others. Let them alone in all their manifestations, of "Gift Concerts," "Distributions," "Legal Decisions," and every other form, shape and style.

THE "BUTTER-COMPOUND" CHAP,

whose powder will enable one to turn out no end of butter at "Four Cents a Pound" seems to have exhausted the "Great West" and to be working eastward. The butter stuff "takes its way" in just an opposite direction to Bishop Berkeley's "Course of Empire." The butter-compound man at one time hailed from a town in Ohio. Then Western New York was his dwelling place. At last he located in Hartford where we were sure we had him. One Hartford friend called on him and found the door shut, but with a hole for letters. He called again and again, but no butter-compound man could he find. Now the chap turns up in Middlesex Co., Mass., and within about 20 miles of "The Hub."—If we do not mistake the Massachusetts dairy people who pride themselves on the excellence of their butter, this "four cents a pound" fellow will have a hard time of it.

THE EXERCISE OF COMMON SENSE

in the matter will show its utter absurdity. The circulars of this butter-compound man, actually shout and shriek for people to come and buy his stuff, which will allow them to make butter at "four cents a pound," and the "best of butter," "which cannot be detected from pure cream butter." Just look at it from a business point of view; "the best of butter" retails in Boston any where from 50c. to \$1.25 per lb. But suppose we put the "best of butter" at the low price of poor butter, 20c. per lb., 100 lbs. would sell for \$20. It is claimed that it can be made for 4c. a pound, or \$4, leaving a profit of at least \$16 on every hundred pounds. If this could be clearly shown at the Merchants' Exchange on State Street, this butter powder man could raise a million of dollars in one day, to go into the manufacture of this butter. He could get independently rich in a year. Yet, instead of doing this, he sends out his circulars, fairly beseeching other people to get rich by buying his stuff at \$1 per box (to make 100 lbs. of butter) at retail, or \$6 per doz. Now, look here, farmers, isn't this just altogether, quite absolutely too thin? We do not understand the "glamour" which all such propositions seem to fix upon the eyes of ordinarily shrewd people. Hundreds fall under it, else these humbugs could not flourish. With regard to this "Butter Humbug," right in your own precinct, we call upon you gentlemen of the "Massachusetts State Board of Agriculture," and you gentlemen of the "Massachusetts Society for the Promotion of Agriculture," who are doing so much good in other directions, to take up this vile fraud upon your farmers. Skin it of all its specious fallacies, and show up its naked carcass as a thing to be avoided.

MEDICAL MATTERS

are duller than we have known them in a long time; even the old things seem to have lost their vitality, and the "7 Barks" chap offers premiums of cake baskets and things to those who make the quickest sales. Some of these medical chaps send out circulars with the taking titles of "The Art of Money Making," "How to Get Rich," and the like, but we soon come to the same old story—sell their stuff, and make money.... We may as well say here to one very earnest person, who, to judge from his long letters on many foolseap pages, must have been badly handled by various quacks, and wishes us to help him expose them, but gives no name and address, that this is not our style of doing business. If he, or any other, has a complaint to make, we must have a

FULL AND SUBSTANTIATED ACCOUNT.

We pay no regard to anonymous letters, and can not make these columns a medium through which to redress private grievances.... Our friend at Oakland, Ill., has fallen in with the enemy, and it is

THE SAME OLD, OLD STORY.

Having some pulmonary trouble, he writes to those quacks, who propose to send a "Recipe Free"—but they take care to accompany the recipe with a circular, saying that their recipe did not do its work, because the herbs, as kept in drug stores, were not fresh. Of course, it follows that the "Doctor" who sends the recipe, can furnish his medicine all right for \$3, or some other sum. This is one of the oldest of quack medicine tricks. Our Oakland friend seems to have thought that there was safety in a "multitude of counsellors," so he consulted

one quack in Rochester, and another in Philadelphia, each of whom wrote him a letter, which was in both cases the same, word for word, and both of the "Doctors" wind up with precisely the same P. S., except the slight changes noted in brackets, saying: "If you desire [if desired] and [you] will give [send] me your symptoms in full, I will prepare a [the] remedy to suit your special [exact] case."—Perhaps this may be taken as an illustration of the saying that "great minds run in the same channel," but more likely it shows that quacks everywhere are up to the same tricks.

DIPHTHERIA REMEDIES,

In our January number we gave the best possible suggestions we could in regard to Diphtheria, on page 25. On page 8 we advised those who "get an alarming circular headed 'Diphtheria, Suffering and Death,' to put it in the fire," etc. We have been called upon by a gentleman who issues a circular with a similar heading, who brings abundantly signed certificates from judges, clergymen, editors, and other prominent citizens, showing that the physician who gave the prescription for manufacturing the medicine he sells, is of the highest standing and character, and also in commendation of the medicine itself. We accept all these statements, and do not call them in question. The ground we take in regard to this and all similar advertised remedies, is this, that no medicine should be advertised and recommended to be used by the public at large, except under medical advice. We exclude all secret remedies of every kind from our advertising column, and invariably urge our readers to shun all such remedies, and to throw all medical circulars of every kind into the fire, without reading, and not have their fears or hopes worked upon. On these general principles, which we act upon always, we wrote what we did last month. Of the particular parties who applied it to themselves, we knew nothing until they presented the certificates above referred to. We have no reason to doubt that the medicine has cured many cases of Diphtheria, and for aught we know, may be the best remedy ever brought before the public; yet we say, neither this nor any other similar or other medicine should be offered to the general public, as this is offered, that is, as a Specific, or Sure Cure, or for universal use, without good medical advice. "What is one man's meat is another's poison."

Catalogues have come in so slowly that our acknowledgments are deferred until next month. Dealers in general, try to have their catalogues ready for February, and as we go to press on the middle of January very few have thus far reached us. To avoid disappointment, we will say that to be noticed in March, all catalogues must reach us by February 12th.

New Spring Wheats.—Mr. Pringle, of Vermont, whose success in producing new varieties of the potato is well known, has been quietly at work for some years past at improving varieties of spring wheat. By continued crossings and selections, he has succeeded in producing varieties, which if they do as well elsewhere, as upon his own farm, can not fail to be of great value. In size of head, and beauty of grain, they are really remarkable.

Maple Sugar.—It is impossible to make the finest product without observing the utmost cleanliness at every step. This should begin with collecting the sap, and the covered buckets made by C. C. Post, Burlington, Vt., will exclude all foreign matter.

The Florida State Fair will be held at Jacksonville on the 12th to 15th of the present month. Our old friend, Doctor J. C. Kenworthy, is President of the Society, and matters are likely to be lively.

Asbestos Paints.—One can not give a final opinion upon a kind of paint until it has been worn for several years. The Asbestos Paints made by the H. W. Johns Manufacturing Co., are a comparatively recent invention, and we have them under trial; thus far we can say that they promise exceedingly well; the colors are of pleasing tints; the paint dries with a smooth hard surface, and, what is of importance to those who use it, it covers well; we have used it upon old and somewhat weather-worn siding, and the man who applied it, being used to painting, called our attention to this fact. We shall use it upon various work, new and old, and report results.

Fine Chinese Primroses.—Whether the amateur has a greenhouse, or cultivates plants in a window only, nothing will afford him more satisfaction than Chinese Primroses. They have the fault of not being readily propagated from cuttings, but this is more than compensated for by the satisfactory results from seed. If one needs cut-flowers, the double whites are among the most useful of white flowers, but if one wishes to make a show on the plant, the single sorts are pre-

erable. With a good strain of seed, each plant as it comes into bloom is a surprise, as they present pleasing difference in foliage as well as in flowers. The finest single Chinese Primroses we have ever seen, were some raised by William Barkham, gardener at Hohokus, N. J., to Jos. Jefferson, Esq., who is eminent in more than one department of art, and whose rural tastes are manifested in Louisiana as well as in New Jersey. Mr. Barkham's plants have elegantly formed leaves, and flowers, some of which are two inches across, with beautifully crimped or fringed edges, and a large, bold, yellow eye, and show by their vigorous development, careful culture.

"Querist," Washington Co., R. I., and 1,492 others. If you do not care enough about your letters to sign them, it is just as well not to write them. New subscribers should understand, what our old friends are well aware of, that we do not notice anonymous letters. We do not publish names, if a wish is expressed that we should not do so. This can be done by signing the letter with whatever name you choose, but the real name must be given to insure attention.

Bommer's Method of Making Manure.—"G. G. P." The method of making manure, detailed in the pamphlet entitled as above, is by no means obsolete, although the book is somewhat old. On the contrary, the practice is very general, and thousands of farmers use some modification of the plan, if not the precise plan itself. The method is valuable and practicable on a small or a large scale, upon every farm in existence.

A Catch Crop of Turnips.—"J. G. Q.," Tioga, Pa., plowed four acres of stubble land after the grain was harvested last summer, brushed in 75 cents worth of flat turnip seeds, and in November pulled 1,310 bushels of turnips, some of them weighing 9 $\frac{3}{4}$ pounds each.

"Upland Game Birds and Water Fowl of the United States," by A. Pope, Jr., is the title of a remarkable work now in course of publication by Scribner, Armstrong & Co., N. Y. The work is to be published in ten parts, each part at \$2.50, giving two plates 22 x 28 inches, after water-color sketches from life, by Mr. Pope, with descriptive text from the best authorities. We style this as a remarkable work, and it is so in two respects: In the first place it manifests on the part of the publishers a confidence that the public will sustain a really good thing, and secondly, it is remarkable as showing the great perfection to which color printing has reached in this country. The plates are perfect reproductions of water-color drawings, presenting all the breadth and freedom of the originals—indeed there is nothing about them that suggests mechanical work. By all sportsmen and naturalists, the work will be highly esteemed. The plates are well worthy of frames, if one chooses to dispose of them in that manner, or they may be kept in a portfolio, or be bound, as one may prefer. Not only the plates, but the text and cover are marvels of elegance and perfection, and reflect great credit upon the house of Scribner, Armstrong & Co.

Special Fertilizers are now receiving much attention from farmers, and we are in a fair way to soon know how far we can profitably apply fertilizers, specially prepared to meet the particular requirements of various crops. The experiments given by Prof. Atwater on another page, show in a most striking manner the value of experiments in this direction. Those who wish to test the value of fertilizers prepared for special crops, after the method proposed by Ville, and others, will find much to interest them in a recent circular issued by the "Mapes Formula and Peruvian Guano Co.," 158 Front Street, N. Y. City. This circular shows a great amount of pains-taking labor, and gives the requirements as to nitrogen, phosphoric acid, and potash, of each of the leading farm crops, and in another table shows the prices at which these constituents may be supplied. There is no secrecy about these formulas, and one can purchase the special manures ready mixed, or, the constituents of each formula being given, he can procure them in any form he may prefer, and mix them himself.

Nebraska Land.—Attention is directed to the advertisement of lands for sale in Nebraska by a New York gentleman. The party is reliable.

Absorbent for Liquid Manure.—"E. C. N.," Elizabeth, N. J. The method of saving the liquid manure from the stables, and carrying it by drain to a cistern, is to be commended. A convenient manner of using the liquid is by mixing some absorbent material with it. Cut straw, leaves, road sweepings, sods, waste of different kinds, such as that from shoddy mills, or tanneries, and even earth from a garden or a field, all make excellent absorbents. Anything will answer, excepting such as would neutralize the valuable properties of the manure, or would add some injurious constituent to it.

Both Instruction and Amusement, in large amount, will surely be obtained from the *American Agriculturist* Microscopes during this year, by all readers, old and young, who will take a little pains to study how to use it. The "Doctor" has begun his lessons, (p.66,) which we advise all to consult and follow out.

Feeding Potatoes to Pigs.—"J. R. M." New Brunswick, Canada. The plan which we have found as good as any other, if not better, for feeding potatoes to pigs, is to provide a kettle, or boiler, to cook them in, and after the potatoes are roughly washed, if they have much earth adhering to them, they are mixed with corn ears, and the whole is boiled until the potatoes are softened to a mush. This, when cool, may then be fed as it is, or some barley, or oat meal, or bran, may be mixed with it when hot, and left to soak until cool enough to feed. We believe this plan saves one-fourth the value of the feed, which more than pays for the trouble.

Heavy Duroc Pigs.—We lately inspected a shipment of Duroc swine, whose weights were above the average of large pigs. The pig bred by W. M. Holmes, of Greenwich, N. Y., and illustrated in the *American Agriculturist* of December last, was among the number; he weighed 637 pounds, and was 20 months old. 28 carcasses shipped from New Jersey weighed 11,864 lbs.

Best Time to Cut Sprouts.—"H. P.," Georgetown, Texas. Sprouts from the roots of trees should be cut when in full leaf and vigor; the shock is then generally fatal to them.

Yield of Corn Fodder.—"R. M.," Pittsfield, Ohio. 2,000 lbs. of corn fodder for 10 bushels of corn is a fair average estimate. The average yield of corn is 30 to 40 bushels per acre, and the crop of stalks should amount to 3 to 4 tons per acre. Where the crop of corn is above the average, this estimate should be modified; as where 60 to 80 bushels per acre is produced the proportion of stalks would be probably not more than one ton to 15 or 20 bushels of corn.

Curing Hay in Pits.—"J. A.," Chehalis Co., W. T. In a moist climate where it is difficult to cure hay, the plan of preserving it by ensilage, as described in the *American Agriculturist* for June, 1875, may be adopted. This plan, if the directions given are properly carried out, will be successful. It is now practised by hundreds of large farmers in Germany and France, for the curing of green corn stalks, clover lucern, and leaves of beets, and is also in use for keeping brewer's grains in this country, by some prominent dairymen.

The N. J. State Horticultural Society will hold its next Annual Meeting in Geological Hall, at Rutgers College, New Brunswick, N. J., on Feb. 6th and 7th. An interesting programme for papers and discussions is offered. "All interested are invited."

Which is the Best Single Book for a Farmer?—While we think that every farmer may profitably invest in a library of moderate size, we are often called upon to answer the question proposed above. In giving a reply, we have to consider the wants of two classes. One, the average farmer, brought up to his occupation, but who wishes a work which he can consult upon matters in which he has had no experience. The other, the novice in farming, who would have some general guide which he can safely follow. We know of no work that will meet the wants of both these classes so well as the "*New American Farm Book*," originally by R. L. Allen, one of the founders of the *American Agriculturist*, and later revised, enlarged, and brought up to the times by his brother, Lewis F. Allen, well known as an authority on agricultural matters. This work covers the whole routine of ordinary farming. Of course if one makes a specialty of cattle, sheep, swine, or such crops as hops, broom-corn, etc., he will naturally procure works on these particular topics, but we know of no book that so thoroughly meets the wants of the general farmer as this. A glance at its contents shows that while all ordinary farming topics are treated in a satisfactory manner, sufficient is given upon special crops to give one an idea of their culture. Soils, their improvements, and their mechanical working, and manners of various kinds, and their uses, are discussed without introducing confusing scientific terms. Grasses and clover, being the groundwork of successful agriculture, have an important place; these are naturally followed by the various grains, root crops, and the different forage plants. The orchard, as an important part of every farm, has a chapter, while fences, hedges, roads, farm-buildings, timber-lands, cisterns—indeed, almost every thing belonging to a farm is treated plainly and in full. All the domestic animals, including poultry, with their management and their diseases, including their prod-

ucts, whether of the dairy, or their flesh when slaughtered, are treated of in a condensed, but most comprehensive manner. Not the least useful portion of the work is the tables, which give those things that one finds it so difficult to carry in mind, and equally difficult to find just when the information is needed—such as the amount of different farm seeds to sow to the acre; the number of trees or plants required for an acre at different distances apart; the comparative value of different foods; bulk of a ton of different articles; weight of a bushel of grains; contents of cisterns; value of fuel; composition of various agricultural products, etc. To those who, like the writer, do not dare to trust to memory for such data, a work of reference of this kind is of the greatest value. We cannot recollect having consulted this work on such matters without finding just the information we sought. It comes the nearest being an Encyclopædia of Agriculture of any work in the language. For the great variety of topics, the clearness of its teachings, and for its directness, we feel warranted in commending Allen's "*New American Farm Book*" as the best single work for the American farmer, and we are sure that it will prove to every one of a value far above its cost. It is a large 12mo. volume of over 500 pages, in clear type. It will be sent from this office, post-paid, for \$2.50.

Farmers Who Live Near Cities

or large towns, especially if these have a manufacturing population, can not afford to continue the old style of farming, and get only small crops of corn, potatoes, and hay to the acre. If the growth of towns and cities increases the farmer's taxes, it also enlarges their opportunities, by offering a market for certain crops, and at the same time affording a supply of manure. One used to the routine of the farm may not care to go into the details of market-gardening, where perishable crops must be marketed daily. But there is a medium between regular market-gardening, and the ordinary routine of farming, which is termed "*Market Farming*." This differs from market-gardening, in raising but a few of the less perishable crops, and from regular farming, in requiring higher culture, the sale of the crops, and the buying of manures. The farmer who lives within ten miles of a large manufacturing town makes a great mistake if he does not consult the wants of that place, and supply them. Take two crops for example—carrots and cabbages. In any large place where many horses are kept, there is a good market for carrots, and there is generally a ready sale for them, to be delivered direct from the field. Working people, such as factory operatives, know the nutritive value of cabbages, and these always meet with a ready sale in such places. Either of these crops is easily managed, and is sure to bring a larger profit than any regular farm crop. While market-gardening has been over-done in the vicinity of some large cities, there are many smaller places where it may be profitably undertaken, to supply the home market, and farmers' sons, instead of looking for work in the cities, had better buy Peter Henderson's "*Gardening for Profit*," and go to work at supplying the wants of the nearest towns. To those who would raise some of the less perishable crops, like those we have mentioned, we also commend P. T. Quinn's "*Money in the Garden*," and Frank Brill's "*Farm Gardening and Seed Growing*." The first two are sent post-paid from this office for \$1.50 each, and the last named for \$1.00. Any farmer near a large town, can profitably invest in all three of these works. Though on similar subjects, each has its peculiar features, and is well worth the price to any cultivator of the crops on which it treats.

Basket Items continued on page 73.

Important Farm Experiments.

Most soils, after a few years cropping, begin to lose their fertility. This is because the crops have taken away more of certain of the ingredients of plant-food than the soil has been able to re-supply. Barn-yard manure, which contains all the elements of plant-food, is usually employed to restore the lost fertility. But there is not half enough manure produced to give the renewed or increased fertility needed for the greatest profit, except on farms where a good deal of live stock is kept. Other fertilizers are needed for the most profitable farming. What shall they be? Farmers have been groping in the dark, trying guano, phosphates, bone, poudrettes, and what not, without knowing either what their soils and crops needed, or what the fertilizers supplied. And it is a fact that a very large part of the cost of all such applications has been wasted—an immense sum, certainly millions of dollars in the aggregate,—because many of these fertilizers have proved, if not really worthless, at

least not the thing needed—and others, while supplying the needed elements for the soil or crop, have furnished, at much cost, a large amount of material, valuable in its place, but not needed by the particular soil to which they were applied. Prof. Atwater, in his articles published in the *American Agriculturist*, during three years past, has been urging farmers, each for himself and on his own particular soil, and before investing largely in commercial fertilizers, to address questions to their individual soils in the form of experiments on a small and inexpensive scale, but so carefully that the questions would be answered. There is no doubt that this is the best way. A few experiments, with fertilizers costing \$3 to \$10, much if not all of which will be returned in the crop, will do more to tell the farmer what his soil needs, than \$500 or \$1,000 spent in analysis of the soil.—Such experiments have been recommended over and over again, by the leading agricultural chemists in Europe and America, and have been carried out by practical men with the greatest profit. They are rational, simple, easy, and cheap. To facilitate their introduction last season, samples of fertilizers of tested qualities, were sent out, at cost price, \$4.50—\$6.00 per set, from the Agricultural Experiment Station, at Middletown, Conn. Prof. Atwater gives some of the results elsewhere, (page 50.) For farmers to get samples of genuine fertilizers, with explanations of their composition and use, at such low cost, was something; to have the offer to test the fertilizers, and with them their soils, was more. Numerous reports from the men who have made the experiments, and are more than pleased with the results, attest their utility. These experiments ought to lead many other farmers to make similar ones. To aid them in so doing, there is talk of making arrangements to supply the subscribers of the *American Agriculturist*, who may wish them, samples of fertilizers for the coming season, as was done by the Connecticut Station last year; but no plan has yet been adopted, and may not be. If this is arranged for, it will be announced in our next paper.

American Cheese—Foreign Demand.

The broad pastures of our vast country are rapidly becoming feeders of Europe. The year just past has witnessed an increase of several hundred per cent in the export of fresh beef and mutton, mainly produced on the grass-growing and corn-producing Western prairie lands; and it only requires the general introduction of Short-horn blood among Western cattle to extend this export of fresh beef in the carcass, and of live beef cattle, to an immense amount. As fresh meat can now be taken from the Atlantic seaboard, and laid down in good condition in the chief seaports of Western Europe at small cost, we only need to produce good beef, to be able to compete successfully in the meat markets of the Western portions of the Old World.

But the South and the far West are not alone yielding exportable products. Large quantities of Cheese to meet a foreign demand are produced in the Middle States, as well as in several of the Western States. The following figures, from the U. S. Bureau of Statistics, shows a wonderful increase in the

EXPORT OF CHEESE TO FOREIGN COUNTRIES.

1860.....	15,515,739 lbs.	1869.....	39,960,367 lbs.
1861.....	32,361,438 "	1870.....	57,296,327 "
1862.....	34,052,678 "	1871.....	63,698,867 "
1863.....	42,045,054 "	1872.....	66,201,025 "
1864.....	47,751,329 "	1873.....	80,363,540 "
1865.....	53,098,468 "	1874.....	90,611,077 "
1866.....	36,411,985 "	1875.....	101,010,853 "
1867.....	52,352,127 "	1876.....	97,676,264 "
1868.....	51,097,203 "	1877.....	107,364,666 "

Bee Notes for February.

BY L. C. ROOT, MOHAWK, N. Y.

If all the proper requirements may be observed without disturbing bees during this month, it will be desirable. I found, by a quiet examination in my bee cellar a few days ago, that mice had found their way into the place, and were disturbing the bees by making their nests in the cotton quilts directly over the clusters of bees, where they found it very warm and comfortable. This may be agreeable to the mouse, but is not conducive to the quiet desirable for the bees. The mice may be easily caught by baiting an ordinary trap with cheese.... For hives wintered out of doors, follow directions given last month.

I propose to give, during the present winter, the respective amounts of honey consumed by four hives of bees each month. I have left one swarm on its summer stand, to show the difference in the amount required when bees are wintered out of doors, or when properly wintered in a well-arranged in-door repository. During the month of December, three swarms in the cellar consumed honey as follows:—No. 1, $\frac{1}{2}$ lb.; No. 2, $\frac{3}{4}$ lb.; No. 3, $1\frac{1}{2}$ lbs. No

3 is a very heavy hive, and in order to test the desirability of having swarms numerous in bees, I united four swarms before placing them in winter quarters. It should be borne in mind, by those who note these results during winter and spring, that this swarm commences the winter with four times as many bees as each of the other three. No 4, which is the live out of doors, consumed $4\frac{1}{4}$ lbs. No. 1, and No. 4, are both Italian swarms, and are, as far as I can determine, in nearly every way about equal. Yet the latter, being exposed to out of door changes of temperature, consumes $4\frac{1}{4}$ lbs., while the former takes but $\frac{1}{2}$ lb. This should be a point of interest to advocates of out-door wintering.

Review of the Live Stock Market for 1877.

The history of the live stock market for the past year has been an eventful one. The first six months of the year witnessed a slow but steady trade without serious fluctuation in prices. Then came the great strikes on the railroads which seriously interfered with business. For two weeks trade was practically dead, only a few poor local supplies furnishing stock for the butchers. Prices, however, only advanced to 14c. per lb. which was the highest point reached. From this time, onwards the business has been dull in the extreme and dealers and wholesale butchers, including those operating in the foreign shipments, lost heavily. Many failures occurred and business has been much depressed. The monthly sales of beeves for the year have been as follows:

Month.	Number Sold.	Prices.
January,.....	46,045.....	8c. @ 13c. per lb.
February,.....	36,036.....	7c. @ 13c. "
March,.....	37,542.....	7c. @ 12c. "
April,.....	40,639.....	7c. @ 12c. "
May,.....	52,877.....	8c. @ 12c. "
June,.....	39,241.....	8c. @ 13c. "
July,.....	45,776.....	7c. @ 13c. "
August,.....	38,487.....	7c. @ 14c. "
September,.....	30,824.....	7c. @ 13c. "
October,.....	50,387.....	6c. @ 13c. "
November,.....	36,379.....	7c. @ 12c. "
December,.....	35,901.....	6c. @ 13c. "
Total,.....	489,133	
Weekly Average,.....	9,406	

The sales of stock other than beeves have been:

Total.	Weekly Average	Range of Prices.
Cows,.....2,654 head..	51.....	\$22 @ \$30 per head.
Calves, 202,754 " ..	1,976	Calves, 7c. @ 9c. per lb.
Sheep & Lambs, 1,163,339 " ..	22,311	Sheep, 4c. @ 10c. "
Lambs,.....	5c.	Lambs, 5c. @ 13c. "
Swine, 1,144,195 " ..	12,003	Live, 4c. @ 7c. "
		Dressed, 5c. @ 8c. "

The foreign shipments of meats and live beeves and sheep, increased largely up to the fall months when the failure of several of the large operators showed the truth of what we have frequently stated as our opinion, viz: that the export business can never become anything more than a spasmodic affair, flourishing when prices are low and stocks heavy here, and when stocks are light and prices high on the other side. The expenses and risks are too great, and the profits, when any are made, are too small to sustain a steady trade. It may answer as a safety valve to relieve pressure here, but as soon as the pressure is relieved the movement must cease. We may build up a business in the course of years, but not until beeves bear a lower price here than we hope to see.

Instructive Notes about Switzerland.—How few have any very definite idea of our little Sister Republic in the Old World. Here are a few items for the readers of the *American Agriculturist*, which Mr. Judd has boiled down from his travelling Note Book.—Switzerland is a northern country, though it does not look so on the map; it is on a line east of Lake Superior, or Quebec, (lat. 46 to 48°). It is a high country, very little of its surface being less than 1,500 feet above the sea level. Many of its mountains are over a mile (5,280 feet) high; 38 of them over 6,400 feet; 29 are over 10,000 feet high, that is 2 miles and more; 8 are 13,075 to 15,150 feet high.—Switzerland's greatest length is 210 miles; greatest breadth, 140 miles; total area, 15,747 square miles, or one-third as large as New York State, or about twice as large as New Jersey or Massachusetts. Its people numbered in 1870 2,669,247, or about the same as Ohio, or in Illinois. Of these, about seven-tenths speak German; over two-tenths French, the rest speak Italian. They live in 92 cities and towns, 63 hamlets, and 6,800 villages. Over 350,000 children are taught in nearly 6,000 public schools. There are about 200,000 fighting men, viz.: 85,000 belonging to the field army; 50,000 reserves; 65,000 militia. The public revenue and expense is only about $\frac{1}{4}$ million dollars, or one-sixth as much as that of the City of New York alone. Its valleys and hill-sides are largely in pasture lands, supporting 993,000 horned cattle, 100,000 horses, 447,000 sheep, 375,000 goats, and 304,000 swine.—The Government is somewhat like our own: The NATIONAL COUNCIL, cor-

responding to our House of Representatives, contains 135 members, about one for every 20,000 inhabitants, elected by the people once in three years. The COUNCIL OF STATES, corresponding to our U. S. Senate, contains two members for each Canton. These two bodies together are called the "Federal Assembly," corresponding to the United States Congress, which is made up of our Senate and House of Representatives. The NATIONAL COUNCIL elects a President and Vice President at every regular and every extraordinary session, who are the chief officers of Switzerland during their term of office. The President can not be re-elected at two consecutive sessions of the National Council. The National Council, and Council of State, in joint session, elect, once in 3 years, 7 Executive Officers of the General Government, corresponding to our Secretaries of State, Treasury, War, Navy, etc. These, acting together, are called the FEDERAL COUNCIL.—The 22 Cantons and 6 Half Cantons of Switzerland, corresponding on a smaller scale, to our States, have their local governments, making local laws, etc., similar to our State Legislatures.

Science Applied to Farming.—XXXVIII.

Scientific Experimenting by Practical Farmers—Testing the Needs of Soils by Trials with Fertilizers.

As explained in the article of this series for April, 1877, there were sent out from the Experiment Station here, last spring, to farmers in Connecticut and other States, nearly 50 sets of fertilizers, with explanations and directions for experiments. With them were blanks on which those who might be willing to take the needed trouble in measuring plots and crops and noting observations and results, were requested to make out reports, and return them to me. To tell the truth, I did not expect many reports. Much to my surprise and gratification, nearly twenty have sent more or less detailed accounts of their experiments. All are interesting and instructive—some particularly so. As an application of science to farming by practical men, who get their living from the labor of their brains and hands upon their farms, and who have found in them a means of testing the needs of their soils, and the ways of supplying them, I am sure these results will be widely welcomed.

The principle upon which these experiments are based is, in brief, this:—The chief office of fertilizers is to supply the plant food that our crops need, and which the soils fail to furnish. It is not good economy to pay high prices for materials which the soil may yield in abundance, but it is good economy to supply the lacking ones in the cheapest way. The most important ingredients of our common commercial fertilizers, are *Nitrogen*, *Phosphoric acid*, and *Potash*, because of both their scarcity in the soil and their high cost. It is in supplying these that guano, phosphates, bone manures, potash salts, and most other commercial fertilizers are chiefly useful. To test the needs of the different soils with reference to these substances, was the special object of the experiments, though the action of different fertilizing materials with different crops was also to be tested. The table below gives the compositions and costs of principal materials used.

Experimental Fertilizers.

Number of Bag.	FERTILIZER USED.				FURNISHING VALUABLE INGREDIENTS.			
	KIND.	lbs. per Acre.	At price of 3 ton.	Cost per Acre.	KIND.*	Assumed per cent.	lbs. per Acre.	Cost per Acre.
I.	Dried Blood.....	320	\$40.00	\$6.40	Nitrogen.....	10	32	\$6.40
II.	Superphosphate.....	330	\$35.00	\$5.60	Phosphoric Acid +.....	16	51	\$5.60
III.	Potash Salt, "Muriate.".....	330	\$45.00	\$7.20	Potash.....	50	160	\$7.20
IV.	Dried Blood.....	160	\$40.00	\$6.40	Nitrogen.....	5	16	\$3.20
	Superphosphate.....	160	\$37.50	\$6.00	Phosphoric Acid +.....	8	25	\$3.20
V.	Dried Blood.....	160	\$40.00	\$6.40	Nitrogen.....	3.3	10	\$1.87
	Superphosphate.....	160	\$37.50	\$6.00	Phosphoric Acid +.....	5.3	17	\$1.87
	"Muriate of Potash.".....	160	\$45.00	\$7.20	Potash.....	16.7	53	\$7.20

* From bone-black. Some of the best "ammoniated" superphosphates are made of bone-black superphosphate, and dried blood. † In soluble form. The prices above, for cash, are, if anything, too high for the present state of the market. The 50 per cent "muriate" of potash, for instance, has been sold extensively in this region for \$40.00 per ton, plus freight from New York.

Besides the articles in the table, a number of others, as Plaster, Nitrate of Soda, Ground Bones, and Peruvian Guano, were supplied to those who wished them. They were all of the best quality, as tested by analysis at our laboratory. Each one

was contained in a bag of 20 lbs., on which the name and composition were marked. The several small bags were packed in one large bag, and with them were sent printed explanations and directions for using. With other suggestions, was one that parallel trials be made with other fertilizers. I give some of the experiments herewith, reserving others, with recapitulation and conclusions, for a succeeding article. The reports are essentially as they came to me; a few changes in form being made for the convenience of the printer.

Experiment with Corn by Mr. D. H. Birdsey, Middlefield, Conn.

Soil: Upland, gravelly loam, with gravelly subsoil. *Previous treatment:* Had been in grass for three previous years. Yield of hay estimated at $\frac{1}{2}$ to $\frac{3}{4}$ ton per acre. Last manuring was (with oats) leached ashes; previous to this, barn manure and bone. *Size of each plot:* 10 square rods. *Amounts of Fertilizers:* Plots 1—5, 20 lbs. each; Plot 6, yard manure, 5 cords per acre, with hen manure and ashes in the hill. *Amount of Seed:* 5 quarts per acre. *Distance between hills:* 4 feet each way. *Planted* May 15. *Harvested* Oct. 26. *Yield* (corn in the ear, measured in bushel basket) as below.

No. of Plot.	1	2	3	4	5	6
KIND OF FERTILIZER.	Dried Blood.	Superphosphate.	Potash Salt.	Muriate.	Muriate.	Yard and Hen Manure and Ashes.
Important Fertilizing Ingredients.	Nitrogen.	Phosphoric Acid.	Potash.	Nitrogen.	Nitrogen.	Yard and Hen Manure and Ashes.
Yield, Corn in the Ear.	24 bu.	24 bu.	6 bu.	24 bu.	6 bu.	54 bu.

Mr. Birdsey says in his report that "on Plot 3, with potash-salt, 5, with dried blood, superphosphate, and potash-salt, and Plot 6, with yard and hen-manure and ashes, (which also furnished potash,) the crops looked well through the season; the stalks were strong, and large, the ears well-filled, and the grain good. On the others (without potash) the growth was very poor, the stalks small, weak, and yellow, and the ears poorly filled—mostly 'nubbins.'... The potash worked wonders wherever it was put." He adds that "on this land, bone formerly brought good crops; with rye, about all the land would hold. But of late years bone does very little good, and don't pay. The same is true of phosphates." This is only one of a considerable number of cases I have observed in this region in which lands where bone, phosphates, guano, and fish, supplying phosphoric acid and nitrogen, have nearly ceased to do good, and potash salts have proved very beneficial. We have had two bone mills in the vicinity for a good while. Fish-scrap is cheap, and our farmers have used a good deal of guano and phosphates. It would seem as though some of our fields had become relatively over-charged with nitrogen and phosphoric acid, and deficient in potash. It is noticeable in Mr. Birdsey's experiment that: (1) on the three plots which had no potash the crop failed; (2) on the three, where potash was applied, they were good; (3) the crop with potash alone (No. 3) was as good as those with potash and other ingredients together, (Nos.

5 and 6.) It certainly looks very much as though this soil had enough of other materials than potash for the present supply. Mr. Birdsey has since bought the 50 per cent muriate of potash at \$42 per ton, delivered here. At this rate, the dressing of

Experiment with Corn, by Mr. W. I. Bartholemew, Putnam, Conn.

Soil: Hill land, surface, dark loam, moist, with clayey sub-soil.—*Previous Manuring and Produce Per Acre:* 1874, No manure; hay, 1 ton. 1875, Barn-yard manure, 12 cart loads; corn, 35 bushels. 1876, No manure; oats, 40 bushels.—*Experimental Crop, 1877:* White Cap Corn.—*Size of Each Plot:* 10 square rods.—*Amounts of Fertilizers Per Acre:* Experiment Station fertilizers and superphosphates, 320 lbs.; unleached ashes, 32 bushels; leached ashes, 48 bushels; hog-manure, 16 cart-loads; hen-manure, 20 bushels; night soil, 32 bushels.—*Fertilizers applied in the hill.* The dried blood and potash salts were scattered over more than a foot square in each hill, and covered with fine earth before dropping the corn.—*Hills:* $3\frac{1}{2}$ feet apart each way; 4 kernels in each hill.—*Planted:* May 15.—*Harvested:* Oct. 10.—*Quality of Crop:* As stated in table, the corn grown by the use of hog-manure and, especially, night-soil, was much injured by mould. The husks and corn were, in some cases, completely rotted with it.—*Amount and Value of Yields:* "70 lbs. of the best yields make a bushel of shelled corn, which is reckoned [in table] at 70c. per bushel. The smaller yields were greener in the cob and corn, and are hardly worth the price affixed, but I concluded to give the exact yield in pounds, and have computed yield and value per acre from actual weight in each case. [Multiplying amount in each plot by 16.] No allowance is made for worth of fodder, which was, on the different numbers, very nearly in the same relative proportions as the corn.—*Cost of Fertilizers:* [Those from Experiment Station, per table above.] "The price of superphosphates depending upon distance from market, I have reckoned all at cost at R. R. Station. [In estimate of gain from use of fertilizer, the omitted value of stalks would more than pay for carting and applying.] "I have placed no prices upon the manures from the farm, as their cost is uncertain, but I am certain that the expense of carting the hog-manure to the field, and applying it, is equal to cost of phosphates in either instance."

NUMBER OF PLOT.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
FERTILIZERS APPLIED.	FERTILIZERS FROM EXPERIMENT STATION.						No MA-NURE.	COMMERCIAL SUPERPHOSPHATES, "AMMONIATED."				WOOD ASHES.		FARM-MADE MANURE.			
KINDS.	Dried Blood. I.	Sup'p's phosphate. II.	Potash Salt. III.	Mixture I+II.	Mixt I+II+III.	Plaster.		Lister's.	Whanns.	Russel Coe's.	Bosworth's.	Dry.	Leached.	Hog Manure.	Hen Manure.	Hen + Pl'str.	Night Soil.
AMOUNTS.	20 lbs.	20 lbs.	20 lbs.	20 lbs.	20 lbs.	20 lbs.	—	20 lbs.	20 lbs.	20 lbs.	20 lbs.	2 Bush-els.	3 Bush-els.	1 Cart-load.	5 Pecks.	5 Pecks + 5 lbs.	2 Bush-els.
FURNISHING INGREDIENTS.*	Nitro-gen.	Phos. Acid P ₂ O ₅ .	Potash. K ₂ O.	N + P ₂ O ₅ .	N + P ₂ O ₅ + K ₂ O.	(1)	—	N + P ₂ O ₅ .	N + P ₂ O ₅ .	N + P ₂ O ₅ .	N + P ₂ O ₅ .	(2)	(2)	(3)	(3)	(3)	(3)
Height July 1st, in inches.	13 inch.	31 inch.	10 inch.	20 inch.	16 inch.	12 inch.	11 inch.	29 inch.	27 inch.	31 inch.	25 inch.	14 inch.	15 inch.	18 inch.	22 inch.	22 inch.	23 inch.
Appearance of Crop at Harvest.	Small.	Average	Small.	Little below average.	Small.	Small.	Average	Average	Little above average	Average	Little below average.	Average	Average	Average	Average	Average	Average
Yield: Ears of Corn.....	60 lbs.	182 lbs.	68 lbs.	166 lbs.	146 lbs.	85 lbs.	74 lbs.	176 lbs.	178 lbs.	192 lbs.	180 lbs.	153 lbs.	165 lbs.	180 lbs.	240 lbs.	248 lbs.	230 lbs.
Appearance of Corn harvested.	Very poor a'd green.	Sound and ripe.	Very poor a'd green.	Sound, ears short.	Sound, ears shorter.	Very poor.	Very poor a'd green.	Sound and ripe	Sound and ripe	Sound and ripe	Sound and ripe	Sound.	Sound.	Little mouldy.	Very sound.	Very sound.	Very mouldy.
Increase in Yield.†.....	-14 lbs.	108 lbs.	-6 lbs.	92 lbs.	72 lbs.	11 lbs.	—	102 lbs.	104 lbs.	118 lbs.	106 lbs.	79 lbs.	91 lbs.	106 lbs.	166 lbs.	174 lbs.	156 lbs.
Value of Increase‡ per Acre.	\$6.24.	\$17.28.	96¢.	\$14.72.	\$11.52.	\$1.76.	—	\$16.32.	\$16.64.	\$18.88.	\$16.96.	\$12.64.	\$14.56.	?	\$26.56.	\$27.84.	?
Cost of Manure	\$6.40.	\$7.60.	\$7.20.	\$6.00.	\$6.40.	\$1.50.	—	\$6.40.	\$6.40.	\$6.40.	\$6.40.	\$7.20.	\$7.20.	?	?	?	?
Gain (or Loss)‡	\$8.64.	\$11.88.	\$8.16.	\$8.72.	\$5.12.	\$0.26.	—	\$9.92.	\$10.24.	\$12.48.	\$10.56.	\$5.44.	\$7.36.	?	?	?	?

* That is, the most valuable fertilizing ingredients. (1) Plaster consists chiefly of Sulphuric Acid and Lime. (2) Ashes contain all the ingredients of plant-food, but Nitrogen. The leached have but little Potash. (3) Contain all the ingredients of plant-food. † Increase (or decrease) as compared with No. 7, unmanured. ‡ Reckoning Corn at 70 cents per bushel. (4) Loss.—The Ammoniated Superphosphates contained 9 to 12½ per cent of available Phosphoric Acid, and 2 to 2½ per cent of Nitrogen.

his experiment, 320 lbs. per acre, would cost \$6.72. He calculates that the stable manure of No. 6 cost \$40 per acre, besides the ashes and bone. He says that on the strength of this experiment he has bought several tons of potash salts and I learn that several of his neighbors have followed his example. In respect to the potash salts doing so well alone, this experiment is exceptional. I should not wish to invest too heavily upon the strength of a single experiment, on one field, with one crop. That potash is most wanted in that soil, I have no doubt. But in the next field the case may be different. As Mr. Birdsey's is one of the simplest, Mr. Bartholemew's is one of the most extensive experiments reported:

In Mr. Bartholemew's experiment, the following points are noticeable:—(1.) In the four cases, Nos. 1, 3, 6, and 7, where phosphoric acid was not supplied, the crop failed. (2.) In every case where phosphoric acid was supplied, either alone, (i. e., as superphosphate with the lime and sulphuric acid incident thereto,) in No. 2, or with some, generally little, nitrogen, in Nos. 2, 5, 8, 9, 10, and 11, the crop was good. (3.) The amounts of phosphoric acid per acre in Nos. 2, 4, and 5, were 51, 25½, and 17 lbs., respectively; the yields, 182, 166, and 146 lbs. show a corresponding decrease. Comparisons of the amounts of phosphoric acid applied, and corn produced in the other cases, of which limited space excludes details, show a similar and singularly uniform ratio between the two. This parallelism between phosphoric acid and yield, runs through the plots with ashes which contained less of the acid, and brought less corn; and those with farm manures, which contained more, and brought more. (4.) The yield with potash-salt, and with dried blood alone, was less than on the one plot with no manure. (5.) While the crop responded uniformly to the phosphoric acid, it got no apparent benefit from the other ingredients of either the chemical fertilizers, the ashes, or the farm manure. (6.) As indicated by the money costs of fertilizers applied and corn produced, there was uniformly a gain of from \$10 to \$12.50 per acre from phosphoric acid alone or with a little nitrogen, a smaller gain in each case where phosphoric acid was supplied with other substances, and, in every case where it was omitted, a loss. What that soil needs most, is clearly phosphoric acid.

This report of Mr. Bartholemew's experiment with fertilizers, is one of the best I have seen from a private farmer in this country. If his farming is equal to his experiments, and there are many others in that region like him, it is easy to see why the Woodstock Farmer's Club, of which I hear he is a

member, and the farming thereabouts, stand in such excellent repute. W. O. ATWATER,
Wesleyan University, Middletown, Conn.

REQUISITES FOR AN ICE-HOUSE.—Ice may be kept under any circumstances, and in any kind of a house, if the following conditions are secured and maintained. The floor upon which the ice is packed, must be perfectly well drained, and closed against access of air. The ice must be in a sufficiently large body, at least 8 feet wide each way, and be stowed compactly, without air spaces between the blocks or layers. If spaces between the blocks can not be avoided, these should be closely filled with pounded ice. The ice should be cut and packed on a dry, cold day, when the blocks will freeze solidly together. There must be a perfectly air-tight, or non-conducting packing, around the ice, of at least one foot in thickness. Dry sawdust is the best material for packing; waste tan bark is nearly, if not quite as good. There must be ample ventilation above the ice, to carry off the dampness which will arise from the packing. The evaporation of the moisture from the upper packing by a brisk current of air, appreciably reduces the temperature. The most frequent causes of failure in keeping ice are, the entrance of air from beneath; the presence of water at the bottom which can not escape, imperfect packing, and too close confinement above.

THE N. Y. STATE DAIRYMEN'S ASSOCIATION, held its Annual Convention at Syracuse, on December 18th. The Hon. Harris Lewis, the President, remarked, in his address, that the past year's success could only be repeated in the coming season, by making every effort to supply all deficiencies in methods, practice, and appliances, and to bring a proper enthusiasm to bear upon the dairy business. He thought that those young men who left the farms to go to the cities, because farming was distasteful to them, did well, for if they staid on their farms the sheriff would surely sell them out in time. A love for one's business, he that what it may, is essential to success. The reading of several practical papers, and a visit to the salt works at Salina, occupied the two days of the Convention.

THE UTILITY OF DAIRY AND OTHER EXHIBITIONS.—Many farmers, dairymen, and others, engaged in different branches of agriculture, not to speak of various artisans and manufacturers, are

inclined to consider exhibitions of their products a useless and expensive trouble. This idea is a mistaken one, as the direct results of these exhibitions are very valuable, and their indirect influence, equally, if not more so. The public are made aware of the existence of many things heretofore unknown to them, and thus consumption is largely increased; the close comparison of the work of different producers, and the ambition engendered by this, tend greatly to an increased excellence in the products, and many new ideas are gained. There are other advantages besides these, but if these were all, they would be sufficient inducement to make these exhibitions desirable, not only to those most closely interested, but to the general public. As an illustration, may be cited the case of a dairy exhibition held annually at Frome, in England, where cheese to the yearly value of five millions of dollars is made. The result is, that since 1870, when the first show of cheese was made, an improvement in quality, estimated at 50 per cent, has been made, and the yearly returns to the district have increased a million dollars.

Tree Scraping and Tree Scrapers.

BY L. D. SNOOK, YATES CO., N. Y.

If orchards were properly cared for, there would be no need of tree-scrapers, but with this, as with pruning, it is a too frequent practice to allow the trees to get in as had a condition as possible, and then to have a serious time at pruning, scraping, and renovating generally. If our yearly advice, to give the trees each spring some alkaline wash, were regarded, there would be little use for the scraper. If one once puts the trunks of his trees in healthy condition, they look so much better, and really are so much more healthy and thrifty, that we are quite sure that he will not omit the slight yearly labor required to keep them in this condition. If one has a neglected orchard, he should not let this spring go by without an attempt to renovate it. Old trunks covered with loose scales of bark, and coated with lichens and mosses, should have in the first place a thorough scraping, and this should extend along the larger limbs so far as is necessary. After this scraping they should receive a strong alkaline wash. There is nothing, to our notion, so good for this purpose as good home-made soft-soap, made from ley (or potash) and grease. The boughten soft-soap is mainly a fraud, it being only cheap hand soap made into a sort of jelly with water. If good home-made soft-soap can be had—

The Cheese Factory.

The tendency of modern improvements is to lighten labor and increase its effectiveness. By the introduction of various kinds of machinery, men engaged in agriculture are enabled to do in one day as much as could be done in a week without them. What the mower, reaper, and thrashing machine have done for farmers, the cheese factory has done for their wives and daughters. Years ago the work of the farmer's wife was never done. The first to go to work in the early morning, she was the last to rest, late in the evening, and after taking her share in the milking and the care of the milk, the churning and cheese-making, with all the slopping, and washing of pans, pails, cans, tubs, churns, and cheese-presses, were added as additional duty to the already sufficient cares of the household. The invention of the factory system changed all this, and relieved the women

of the farm, not only from the care of the milk, but in a great measure from the milking as well. In the farmers' households there is now much more of comfort, leisure, and culture, than there was before all the labor-saving improvements were adopted, and where these are made the most of, there is more profit than formerly. There is more money passing through the dairy farmer's hands now than ever before, and the location of a cheese factory in a dairy district is, to be considered as a decided benefit. The market for cheese is only opened as yet, and before it can be fully occupied, the number of cheese factories may be greatly multiplied. The home demand for this form of food has never been cultivated, the foreign market having received all the attention. There has been no desire to consult differing tastes, and but one kind of cheese, and good, bad, and indifferent of the kind, has been manufactured. An exacting purchaser of cheese might travel over a considerable portion of a large city, without finding any choice beyond an ill-flavored, leathery product which goes by this name, unless he found, by mere accident, some foreign cheese, or some of American make put up in the form of the foreign article, and intended to compete with it. It is a question whether the makers or the consumers are most to blame in this. But it is rarely that a good thing goes a begging for purchasers; on the contrary, a supply of it at once creates a remunerative demand, and which rapidly enlarges as the commodity becomes known. If we had a plenty of cheese of different qualities and shapes, calculated to please the palates

and the eyes of purchasers, there is no doubt that our home market would soon increase so largely, that many new factories would be required to supply the demand, and that the prices obtained for the best product would be very profitable. The process of making factory cheese differs in

would be necessary in seeking a market. As the cheese factory is open but a portion of the season, this income therefore represents not much more than three-fourths of the product from each cow, and during the remainder of the time she adds to the amount of this income. As a rule, each dairy

cow may be made, by the help of the factory, to yield the income stated in cash, besides furnishing some butter for family use or sale during the winter, when the factories are closed, if proper arrangements are made for this. With all their manifest advantages, it is strange that there are not more factories in districts where cows could easily be kept, as well as that dairymen should be contented with cows of so poor an average quality as are common. The experience of the past year, however, during which market gardening has been a losing business, has turned the attention of many farmers to the keeping of cows and the production of milk, and it is reasonable to expect that several factories will be erected in the neighborhood of

the large cities where various articles of food, richly productive of milk, can be cheaply procured.

The cheese factory routine is very simple, and is reduced to a very thorough system in which everything is conducted by strict rule. The milk brought to the factory by the patrons is weighed in a large receiving can, (see fig. 1), and is then run through a strainer and a tin spout into the vats, where it is brought by steam heat to the proper temperature for adding the rennet. The different processes through which the milk passes before it finally appears in the finished shape in the curing room, are

referred to elsewhere. The last stage is by no means an unimportant one. The curing process needs to be managed with the greatest care. The curing house in which the cheese are kept to ripen, and await a purchaser, (shown in figure 2), is constructed so as to maintain an even temperature. The walls are double, and the space between them is filled with sawdust, or other non-conducting material. Steam pipes for heating the room in cool weather are fitted around the walls in many factories, and ample ventilation is provided for. The windows of the curing room are shaded with blinds, or what is preferable, should be made only upon the north side of the building. This room is generally situated above the "make-

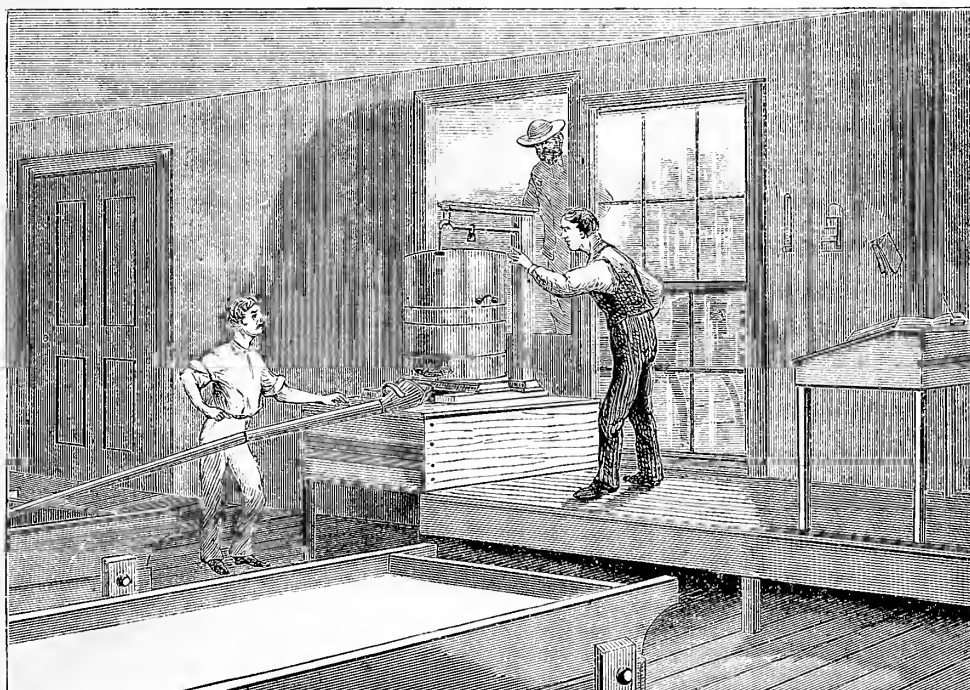


Fig. 1.—CHEESE FACTORY.—RECEIVING AND WEIGHING THE MILK.

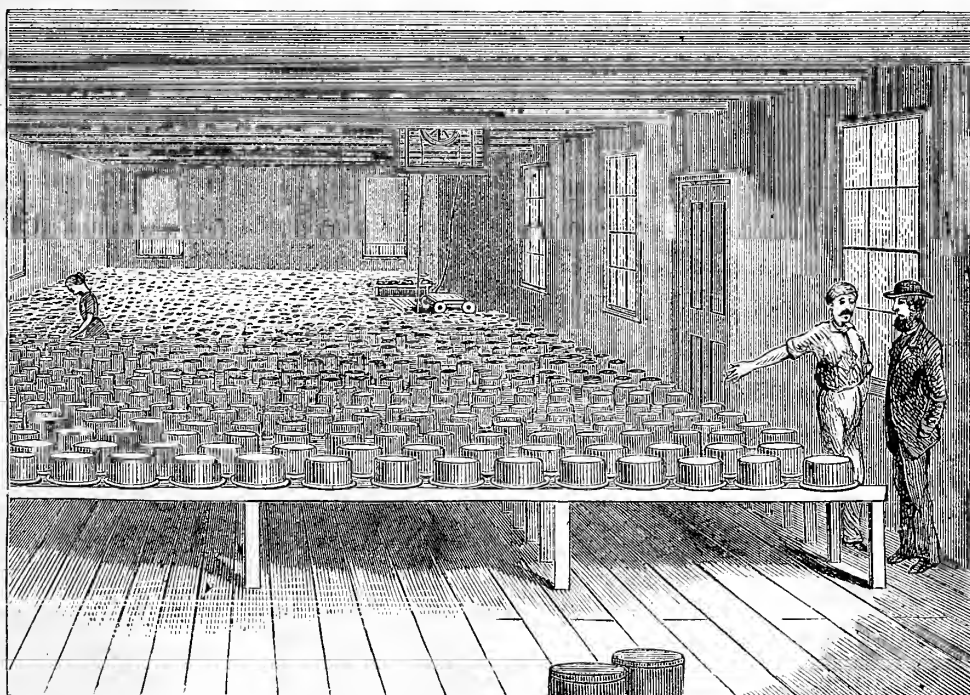


Fig. 2.—CHEESE FACTORY.—THE CURING ROOM.

milk, is greater than he could realize in any other way. An average of 2 cents per quart, or a gross sum of \$40 to \$50 for the season is the satisfactory and profitable income from each cow, when well managed; and this is paid in cash as the cheese may be marketed, without the loss of time that

room," but in some factories a separate building is provided, where the stock of cheese can be kept free from all the effects of dampness, changes of temperature, or the partly vitiated atmosphere from below; as the quality and value of the cheese depend upon the perfectness of the curing.

Among the Farmers.—No. 25.

BY ONE OF THEM.

I have heard from several sources the intimation that the hint that improvement in farm practice was indicated by the quantity of roots grown, as suggested in a recent letter, was quite correct, and that in every part of the country the great need of agriculture is

More Roots.

I have sometimes thought that the reason we did not cultivate more roots was because we have no regular place for them in the rotation to which time-honored custom subjects mowing land, when the grass grows thin, and we think it ought to be "taken up." We swing around the circle—corn, potatoes, oats, (or rye), seeding down at the same time; and then mow as long as we can; or we follow some other rotation, sowing a few turnips as a "catch crop," perhaps, where early potatoes have come off; and so getting a ton or two every year. This is not enough. When milch cows can not have grass, they ought to have, at least, half a bushel of roots a day. At that rate, each cow will eat half a ton a month, allowing about 10 per cent for loss. That quantity is none too much for dry stock which are being well wintered. Our farmers are well aware that the better cows are wintered, the surer and better are their returns when they come in. Yet roots make so much milk that I find where milk can not be sold, it makes so much work in winter with usually poor returns, that an abundance is objectionable, and so there is little inducement to grow roots. However, milk in winter is becoming desirable over almost the whole country. Intelligent farmers are studying the Guenon system which, if it have a real value, indicates which cows will hold out well with their milk, and which will not; and does this while they are mere calves.

Seeding Down to Grass With Roots.

I did not intend to convey the idea in the December number that seeding land down with turnips was a new discovery, for I have seen it practised and written about it before, but have never done it. I remember seeing on the Island of Jersey, a beautiful stand of grass and clover, so thick and strong in October that it looked like a spring seeding, and yet it had been sowed with turnips in July. The roots had been pulled from a good part of the field for feeding to the cows in the byres, and the animals were then being tethered upon the grass. On those parts of the field where the roots were growing in spots, they were almost hidden by the strong rye grass. Yet the yield seemed to me very large. It is sometimes risky to apply such foreign practice in this country, our climate is so different. The summers are hot and dry, and our times of sowing and harvesting differ also. Nevertheless, this is a case in which it would seem we might transplant the custom with success. In fact, I hear of so many cases of successful practice, that it may be confidently recommended.

A letter from Judge Fullerton, of the New York Bar and Bench, but whose large farm is in the vicinity of Washington, says that he has practised seeding down with roots with entire success.

I went over my neighbor Farlee's farm, at Cresskill, the other day, and saw several things worth making a note of. One was the excellent stand of grass where Swedes had been raised. It is new practice with him, but he likes it very much. The roots are sown in drills, but the culture is flat, and the land, after the roots are pulled, is so level that a mowing machine might be used on the field. The grass was sown in August, and makes as much show on the ground as late sown winter grain.

Mr. Crozier tells me that there is no difficulty about sowing grain, or grass, with mangels or sugar-beets, with as good success as with turnips, even though the ground be ridged and manured in the ridges. The culture tends so to flatten the ridges, that by the first of August, which is as early as grass or grain ought to be sowed, or it may be a little earlier, in case the growth of the roots is such that the crop must be "laid by," it is for all useful ends level. The seed will start well under the

shade of the leaves, and, as a rule, these begin to wither at the base, sufficiently to give light and air to the young grass plants, while they are sheltered from too great heat. Sometimes the shade is too much for the good of the grain or grass, but as the season advances it catches up.

The Kind of Roots to Raise.

A good deal depends upon distance from market. If farmers are near as Bergen County and Long Island farmers, it is worth while to put in root crops that may either be sold or fed. This might lead to settling down in favor of Swedish turnips, carrots, and parsnips, for the principal crops.

The Best Swede is undoubtedly the "Shamrock." It comes to this country from England, and its name ought to make it a favorite with farmers and gardeners from the Emerald Isle. Having the merit of growing very quickly, and attaining a large size, while it is smooth and fair in outline, with very little neck, it is adapted to both marketing and feeding, to an unusual degree. Sowed late, it produces the fairest market crops; sowed early, few, if any, varieties exceed it in size, and if it be in soil adapted to its rapid growth, its flavor is sweet, and it is unusually free from pithiness and woody fibres. Among the several slightly-varying kinds which pass under the name of the "Improved American Rutabaga," some are excellent, and perhaps equal to the "Shamrock," but the name does not indicate, by any means, so constant qualities.

The Best Mangel.—In regard to this, I find opinions vary a good deal. The "Long-Red" is the old favorite, and it may be that a greater weight of fodder may be produced to the acre of the improved varieties of this than of other kinds, but the Globe Mangels are growing greatly in favor, especially those of the richest yellow color of the flesh. This color being more or less imparted to the milk and butter, it becomes an object to cultivate those which possess it. The old "Yellow Globe" has been improved by several parties, and of the yellow kinds which are new, and have been well tested, "Warden's Orange Globe," and the "New Kinver," are decidedly the favorites. The latter is one which some of our best growers extol highly, equally for yield, for smoothness, and for color. The varieties claiming special favor originating from the Long-Red, and much like it, only growing larger, and smoother, and with less neck, are "Carter's Mammoth," and the "Norbiton Giant." The amount of leaf which some of the improved sorts have, seems absurdly small compared with the great bulk of the roots, yet this very peculiarity would recommend them in case one wanted to sow grass or grain with the crop.

The Best Carrot, both for feeding and for general marketing, is, without question, the "Half-long Orange," called also "Half-long Red" by some. This is precisely the color of the "Long Orange" carrot, but is much shorter, having quite the character of a direct cross between the "Early Horn" and the "Long Orange." This medium-sized carrot is an enormous cropper, of a smooth, beautiful shape and color, carrying its thickness well to the tip, and a very attractive market sort as well as an excellent table variety. In fact, it seems to leave little improvement possible, or at least probable. It should be borne in mind that imported seed is not nearly so good as the best American.

The Best Parsnip is probably the "Long, Smooth White,"—best, because it yields large crops, and is smooth and long. The several varieties of long parsnips are much alike, and there is little choice between them.

Corn Fodder—A Great Crop.

Once or twice during the summer I passed a fine field of corn, sowed in drills, not far from Mr. Farlee's, and had a suspicion that he had been hiring a piece of ground for the purpose; but why he should take an old worn-out field, which had lain idle long enough to have cedar trees four inches in diameter at the root, growing upon a good part of it, I did not see. As I was saying, I went over his farm a few days ago. My errand was to see his fine herd of Jerseys, and well worth the visit as they were, that field of corn made quite as strong

an impression. The land, it seems, has been held for speculative purposes, and is owned by a relative, so Mr. Farlee obtained the use of it rent free if he would grub out the cedars, and put it in good cultivation. This, most people would think, was paying dearly for the use of the land; but it lay convenient, and the sequel shows his plan was a good one. The cedars were grubbed out, the land plowed, furrowed out, liberally dressed with hen-manure compost in the drills, and sowed with corn for fodder. It was kept clean, and the corn made an enormous growth. The season was very favorable. Mr. Farlee cuts up his corn fodder, and after it wilts upon the ground for a day or two, if the weather be favorable, otherwise at once, it is set up in big stooks, and securely bound. These stooks are twice as large as ordinary corn-stooks—they are constructed around a stooking-horse, and the corn fodder is left in them all winter, or until consumed. When brought into the barn, those are selected which show signs of weakness—of course, first any which may have blown over, though if well set up this does not occur very often. The outer leaves and stalks are of course considerably weathered, but within the color is green and fresh, and cattle eat almost the whole. The value of this single crop will pay for the clearing, and all the labor and manure required to produce it, and leave a handsome balance over.

I have never seen corn fodder better secured, nor in better shape for standing well through the winter. A small portion only of it will be damaged by contact with the soil, and the labor of harvesting this crop, which is such a bug-bear as to prevent many farmers from undertaking to raise it, or as much of it as they would like, is thus reduced to a minimum—certainly less than securing the hay crop which would be produced on the same land.

Writing about raising fodder corn reminds me of the importance of

Cutting Corn Fodder

when it is fed out. My cows are getting little else now in the way of dry fodder. It is cut by hand, in inch hits, moistened with scalding water, sprinkled with rye bran and a little corn and oat meal, covered up with a rubber cloth, and left to soak and swell from morning to evening, and evening to morning. The result is, it is eaten up very clean, a double handful of butts a day being all that the most fastidious cow rejects. In cutting up a bundle of exceedingly large, coarse stalks, the cuts just at the but are made four or five inches long, on purpose to have them in shape to go into the manure. The cutting box which I use, is on the principle of the old-fashioned "cutting box and hay-knife," but much stronger, heavier, wider in the throat, or narrow part of the box, and easier to work. It is known as Clark's hay-cutter, and costs \$7 or \$8, I believe—at any rate, mine did. It may be regulated to cut about one inch to an inch and a half long, but I prefer to leave it so that the length of the cut may be optional with the cutter.

When large quantities of stalks, straw, or hay, are to be cut, of course no such "one-horse" apparatus as mine is admissible. A power cutter is needed, and is by far the most economical. These may be operated by horse, bull, or steam power, and there are several really first-class machines.

The English name for implements for this purpose is "Chaff Cutters." That is, machines for converting hay, straw, etc., into *chaff*, and certainly finely-cut hay, or even corn stalks, is very like what we call chaff—that is, oat or wheat chaff. I wish our manufacturers would adopt this name—it is surely a good one; and we have *cutters* enough without this application of the word.

Hay-Knives or Stack-Cutters.

I have never had much experience with hay-knives, and yet have used several of different patterns. Lately, however, I have been using one of the "Weymouth Patent Knives," and an admirable one it is. It is made sword-shaped, with a zig-zag edge, the front edge of the zig-zag only being sharpened. It is certainly not more than half the labor to cut through the hay with this knife, that it is with the ordinary ones. The benefit of cutting

from the side of a mow, or stack, is so great that I wonder at myself that I have ever been contented to pitch off hay from the top of the mow, unless indeed I wanted to use some particular kind of hay, the location of which was accessible there. The obvious advantage of the use of the knife is that hay gotten in early, with the sweet fragrance of vernal grass, and clover, may thus be mingled with that of later growth, wiry, perhaps, and lacking in flavor, though not in nutrition, and sometimes even in that, and this with the succulent aftermath perhaps, all together being highly relishable. Its use admits of sorting horse from cow hay, or throwing out any that may have heated.

Talks on Farm Crops.—No. 12.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

"I have lately read several articles in the papers," said Charley, "recommending rye as a green manure for potatoes."

"This crop," said I, "has certainly several things to recommend it for this purpose. It grows late in autumn, and early in spring, and thrives best on land most likely to be benefitted by plowing under a quantity of green vegetable matter."

"For our own use," said the Deacon, "we select potatoes grown on light, dry, sandy soil. They are cleaner and smoother than if grown on heavier soils, and are supposed to be of better quality than on low, rich, alluvial, or mucky land."

"On my farm," said I, "the old men, who worked on it before it was underdrained, frequently remarked: 'The east side of this field, or the north end of that one, or the west side of such a lot, is good for potatoes'—and in every case they select dry, sandy, rolling land. I have no doubt as to their general correctness. Still, since underdraining, we often get far larger crops on the rich, dark soil in the valleys. Last year we had a great crop of 'Early Vermont' potatoes on the lower portion of a field where, before draining, nothing would grow except coarse grass and rushes. The soil is a black, mucky sand. On this the crop was not only unusually luxuriant, and the yield large, but the potatoes were of remarkable excellence."

Facts of this kind lead us to suppose that potatoes like a loose soil, rich in decomposed carbonaceous matter. And, this being granted, it seems not unreasonable to conclude that it is a good thing to plow under some green crop, which will furnish a considerable quantity of carbonaceous matter. Rye is recommended for this purpose.

"And in addition to the carbonaceous matter," said Charley, "it is claimed that when we plow under a crop of rye in the spring, we turn under a large quantity of water which keeps the ground moist, and enables the crop to withstand drouth."

"These arguments," said I, "are very plausible, but will scarcely bear a critical examination. In the first place, a crop of rye which, if cut and cured, would afford two tons of hay or straw, would not, in its greenest and most succulent condition, contain over 11 tons of water. The crop plowed under adds to the soil less than would be furnished by one-tenth of an inch of rain. Furthermore, the growing crop of rye would suck up out of the soil, and evaporate into the atmosphere, far more water, during a few days previous to its being plowed under, than the crop contains. Lawes & Gilbert determined, by actual experiment, that on June 27th and 28th, 1870, an acre of fallow land, 4½ ft. deep, contained 2,875 tons of water, while an acre adjoining, in barley, contained, to the same depth, only 1,951 tons of water. In other words, the roots of the barley had sucked up out of the soil, 924 gross tons of water per acre, equal to 1,034 of our tons. To grow a crop of rye, and turn it under for its water, is absurd. It would be much more reasonable to suppose that the good effect of the rye was due to its evaporating such a large quantity of water from the soil, and so making it drier."

"There may be something in that," said the Doctor. "We are too much inclined to look on all our agricultural practices in reference to their action on the supply of plant-food. There are other

things equally important, and draining is one of them. We drain to get rid of the water that the soil will not hold. If it holds 25 per cent of water, and it contains 30 percent, then we drain to remove this 5 tons of water out of every 100 tons of soil.

"Mr. Lawes found that the plot of land in his experimental wheat field, which has received no manure for many years, contained to the depth of 9 inches less than 23½ per cent of water, while the plot adjoining, which had received 14 tons of barn yard manure every year for 23 years, contained nearly 34½ per cent of water. In other words, the 9 inches of surface soil of the 'no manure plot,' contained 352 tons of water per acre, while the plot adjoining, only a few feet distant, which had been heavily manured for many years, contained 517 tons of water per acre. The land is thoroughly underdrained, and one plot, so far as surplus water is concerned, was probably just as wet and just as dry as the other. The examination was made in January, and we may presume that the no manure plot, at any rate, was saturated with water. It contained all the water it would hold."

"This is an interesting fact," said the Deacon, "and explains why our soils, when new and full of organic matter, did not need draining so much as they do after being cultivated and cropped for 30 or 40 years without manure. It explains, also, why we suffer more from drouths than formerly. There is far less moisture in the soil than there was when the country was new, and when the soil was full of what you call 'natural manure.' But I do not see what all this has to do with plowing under a crop of rye for potatoes."

"Simply this:" said I, "It is difficult to explain why the rye should do so much good as is claimed. It seems absurd to attribute this to the water in the rye. And it has not been proved that the carbonaceous matter, which the rye gets from the atmosphere, is specially needed by the potato crop."

Here is an experiment made in 1871, on a sharp, gravelly, overcropped soil, in poor condition:

Plot 1—without manure, produced.....	70 bu. per acre.
" 2—with superphosphate and ammonia.....	186 "
" 3—with superphosphate, ammonia, and potash.....	304 "
" 4—with 20 tons farm yard manure.....	197 "

Plot 3—with ammonia, phosphates, and potash, and no carbonaceous matter, produced more potatoes than Plot 4, with farm yard manure, which, in addition to the ammonia, phosphates, and potash, contained a large amount of carbonaceous matter. And we should expect a "sharp, gravelly soil," to be unusually poor in carbonaceous matter.

Now it may be taken for granted that the rye does not get anything from the atmosphere except carbonic acid. The nitrogen and mineral matter it gets from the soil. If you grow and plow under a crop of rye, you add nothing to the soil except carbonaceous matter. And, so far as I can see, the good effect of the rye must be due to some of the following causes:—1. The roots of the rye find a quantity of soluble plant-food in the soil. They gather it up, and when the rye is plowed under, this plant-food is left in a more compact or concentrated form. The roots of the potatoes can perhaps use it to better advantage than if it was distributed through the soil.—2. The rye, by evaporating water, may make the subsoil drier during the winter and spring months, and to that extent have the same beneficial effect as underdraining.—3. The rye may get considerable carbonaceous matter from the rain and atmosphere, and this, when the crop is plowed under, decomposes, and renders the soil more retentive of moisture.—4. The rye may keep the soil loose and render its mechanical condition more favorable for the potatoes.

It cannot be doubted, from the facts which have been published, that plowing under a crop of rye sometimes proves of great benefit to the following crop of potatoes. But I have an idea that much will depend on the character of the soil and on the season. The practice may in some seasons be a good one on some soils and not on others. If I had a crop of rye sown for plowing under as a green manure for potatoes, I would plow it under; but if I had not, I should not despair of being able to raise just as good a crop by other means.

If the growth of the rye makes the land drier,

the same effect can be obtained by underdraining—or we can plant on land that does not need draining. If the rye makes the land loose and mellow, good tillage will do the same thing. If the rye concentrates the nitrogenous and mineral plant-food, we can apply this same plant-food in artificial manures. If, in addition to this, it furnishes carbonaceous matter, farm-yard manure will do the same thing. But after we have done all that we can do, we shall still be very much dependent on the season. And it will be a good plan to plant our potatoes at different times.

Three years ago (1875) we had a remarkably favorable season for potatoes. When the land was in fair condition, we had a good crop, whether we planted early or late, in hills or in drills.

In 1876 we had a fair crop on very rich, well drained, warm, loose, sandy loam, when we planted early varieties, early, kept the soil clean and fought the bugs. But late varieties, planted early or late, or early varieties planted late, were, on my farm at least, and also on the Deacon's, a failure.

Last year (1877) late planting of early or medium varieties gave fully as good a crop as early planting. In 1876 we had a moist, growing spring, followed by a great drouth in July and August. And the drouth and the bugs left the late planted potatoes no chance to grow. The early varieties, when planted early, had got a good growth before the drouth seriously injured them.

Last year we had a severe drouth early in the season, and abundant rains in July, August, and September. Hence the late planted potatoes, where the soil was favorable, grew rapidly, and produced a fair crop. I had several acres of "Late Rose" potatoes, planted on June 16th and 17th, that made a vigorous growth, and gave a good crop. The land was a clover sod in fair condition, turned over immediately before planting, and no manure used.

If the season is favorable, and the land is clean and mellow, a late planted crop of potatoes will have a ranker and more luxuriant growth, than a crop planted earlier in the season. My early planted potatoes, last year, were liberally manured, but the vines were never as dark colored and vigorous as those planted late without manure.

Where "Early Rose" or "Early Vermont" potatoes are grown for an early crop, it is necessary to plant early and manure liberally. We have to "force" them—not by artificial heat, but by extra manuring. An unnaturally early crop is a costly crop, and is only profitable where we can get an extra price. Where "Early Rose" potatoes are raised, as they are to a considerable extent in this section, for sale as a common farm crop in the fall, it is very doubtful whether we can afford to plant them very early. They require much richer land, or more manure, than they do when planted later.

"That is all true, theoretically," said the Doctor, "but as a matter of actual practice, I suppose our friend, the Deacon, will tell us that it depends a good deal on the season; your suggestion to plant part of the crop early, with liberal manuring, and part late, with less manure, is safe and sound."

"Well," said the Deacon, "I had about concluded that we should have to plant early kinds of potatoes, and plant them early, so that they would get out of harm's way, or the bug's way, before harvest, but I am not sure that late planting of early potatoes will not sometimes give better results. It will depend on the season. The main crop of potatoes will be raised, not from an early variety, nor yet from a late variety, but from a half early or medium variety like the 'Late Rose,' and it will be planted just before or just after corn planting."

I presume the Deacon is right. But if I had very rich land in prime condition, and wanted a big crop of autumn or winter potatoes, I would plant the "Late Rose" as early as the condition of the land and other spring work would admit—say as soon as we had sown our barley and oats.

"But suppose," said the Deacon, "you had poor land?"—"Even in that case," said I, "early planting gives us the best chance. I would plant early, in hills 3 feet apart, and use large sets with only a few eyes in a set, and only one set in a hill."

"I have known just as good crops," said the Doctor, "raised from small seed as from large."

"On that point," said I, "much depends on circumstances. If I got seed from a distance; if the land was rich, warm, and mellow, and everything favorable, and if we planted early, I would prefer small or medium sized potatoes, rather than large—not that I should expect a larger crop, but because the small seed would plant twice as much land, and thus reduce the cost of seed one-half. But if the land was in poor condition, and we were obliged to plant late, I should prefer the larger seed."

Making Wheels by Machinery.

The lightness, elegance, and surprising strength of American carriage wheels are well known, not only everywhere in this country, but are considered remarkable in Europe. American carriages are becoming fashionable in England, now that their lightness has been found consistent with actually greater strength than is possessed by the heavy, lumbering English vehicles. Our carriages, wagons, and wheeled vehicles generally, owe much of their beauty and usefulness to the excellent structure of the wheels, and this is principally due to the excellence of the machinery by which all the parts of the wheels are made and fitted together. Formerly it was a long and tedious labor to make a wheel, and when it was made, the joints were ill-fitted and soon worked loose. When a wheel gives out, the carriage is useless, and it is therefore of the greatest importance that the wheels of all our vehicles, subjected to very hard usage upon our generally miserable roads, should be made in the best manner and fitted with exactness. It is only by the use of machinery that joints can be made to fit perfectly close, and that every mortise and tenon of this kind in a wheel should be precisely alike. Since machinery has come into general use, and there have been such extensive wagon and carriage manufacturing as those of the Milburn and the South Bend works in operation, farm and road wagons and carriages of all sorts have been greatly cheapened and improved. The work about a wagon or carriage requiring the greatest skill, is in the wheels. If the joints are not well made, the

more severe test of the perfection of a wheel can be exacted than that of the arid plains of the West;

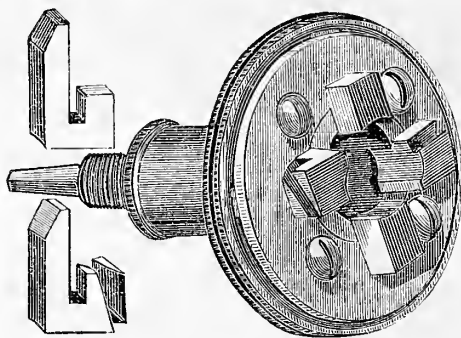


Fig. 3.—HOLLOW AUGER.

and machine made wheels have stood this test without failure. The machinery used in making wheels is very varied. The hubs are turned in lathes and mortised by mortising machines; the felloes are sawed by band-saws, which cut several pieces at one operation, and the spokes are turned in a lathe and tenoned by a tenoning machine. All this is simple work, however, and could be done very well by an expert mechanic by hand. But to bore out the hub perfectly true, with a tapering hole if required, and at right angles with the plane of the wheel, is hardly possible to be done by hand in every case, even by the most skillful workman. This, however, is done by the auger shown at figure 1, which is held at right angles to the rim of the

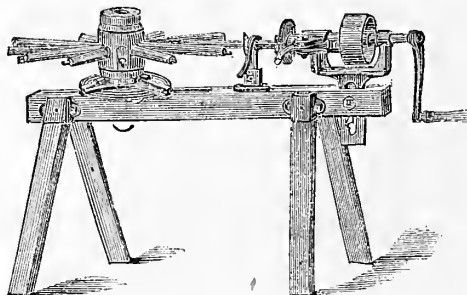


Fig. 4.—MAKING TENONS.

wheel by the clamps shown at figure 2. This ensures the proper boring of the hub and the true running of the wheel upon the axle. The tenons of the spokes are cut with the hollow auger shown at figure 3. This is mounted upon a frame, upon which the hub is also mounted, as shown at figure 4, and thus every tenon is made to bear an exact and proper relation to the hub and the axle and with each other. The felloes are bored in the manner shown at figure 5, and each hole being of precisely the same size and in the same direction, is made to fit any one of the tenons of the spokes. This ensures the easy but perfectly accurate fitting of these parts, and the consequent strength and durability of the wheel, although it may be of such exceeding lightness as is seen in one of the road wagons to which the fastest roadsters are hitched. The machinery here illustrated is made by the Silver & Deming Manufacturing Co., Salem, Ohio.

Comparative Value of Pedigree and Non-Recorded Jerseys.

BY THOMAS FITCH, NEW LONDON, CONN.

The Boston "Evening Traveler," of Oct. 19th, gave a full report of the sale of the herd of the late Alvin Adams, of Watertown, Mass., with the pedigree, name, and number of registry in the American Jersey Cattle Club Register, of 38 cows recorded in the book, with the names of the purchaser and residence; and also of 5 cows without pedigrees, with names of cows and purchaser, and the price each cow sold for, I find by this report that the five cows without pedigrees, or record, sold for a higher average price by about \$10 each, than those registered with authentic pedigrees. This report says, also, there were present about 800 of the Jersey stockraisers of the United States, etc., and that this herd was considered the finest in the country.

Admitting these facts, how happens it that the five cows, without record or pedigree, sold for a higher price than the Herd Register cows, except for the real reason, that they were the best cows, as they were, in all that makes value in a Jersey cow, viz., in form, size, udders, teats, colors, beauty, and all the qualities making value. I have conversed with several breeders, members of this Club, that were present at this sale, and they, without exception, all admit this.

The American Jersey Cattle Club, when it formed their Register, claimed that its object was to prevent imposition upon purchasers of Jerseys, by separating the pure from the mixed stock, or grades, that were sold for thoroughbreds. It was to be a purely philanthropic institution to prevent fraud. After years of labor, and sacrifice, and the collecting of thousands of dollars from the public, in the shape of entry fees to non-members of this Club, of

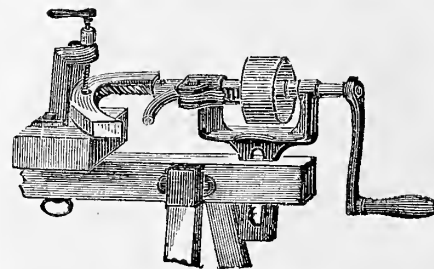


Fig. 5.—BORING RIMS.

\$3 on each animal registered, and the boast in one of the Club's reports, that an additional value of more than 50 p. c. had been given to every Jersey entered in this Register, in almost the suburbs of Boston, on the very spot where the Club originated, with this great company of experts, breeders, and judges, the cows without pedigrees, or record, out-sell those with pedigrees and record in this book.

[The writer of the above has perhaps singled out an exceptional case whereon to found a general rule. Any person who expects that pedigree alone will confer excellence, will probably be disappointed; but we imagine that Mr. Fitch himself places some reliance on the pedigree or descent of his own stock, even of those not recorded in the A. J. C. C. Herd Register.—Ed.]

Rustic Poultry Houses.

The most profitable poultry in the world are those of the Irish and French people. More eggs are exported from France and Ireland than from any other countries. The fowls of those countries are in greater part lodged in the most primitive sort of shelters, there being few, or none, of the costly buildings which in this country are generally supposed to be needed for profitable poultry keeping. The usual French fowl house is a little cabin of boards or bark, with a thatched roof, and a yard fenced in with small poles or brush. Generally

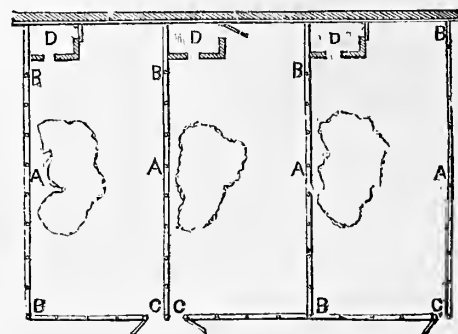


Fig. 1.—PLAN OF CHICKEN YARD.

there is a fruit tree of some kind, or more than one, in the yard. The Irish fowls are kept either in shelters made wholly of sods, built against the back part of the house, and warmed by the heat of the chimney, or the birds are accommodated with roosting places, along with the cow, in a part of the house itself. The hens are kept dry and warm, and this is the secret of their prolificness in eggs.

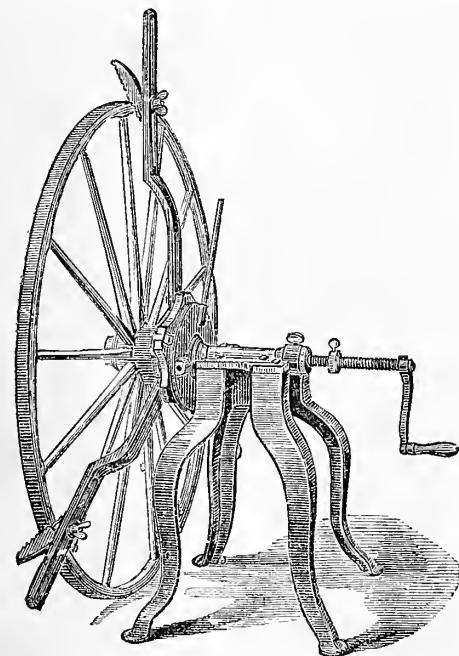


Fig. 2.—CLAMP FOR HOLDING HUB.

wheels soon begin to work, and open, water penetrates, the wood swells and shrinks alternately, and they very soon become an utter wreck. No

An illustration is here given (figure 2) of a very cheap poultry yard, similar to those we have often seen about the French farms. It is in three parts, and any number of compartments may be added. In each division there is a small, cheaply constructed house for roosting and laying. This is made low in the roof, for the purpose of warmth, and may hold a dozen fowls. For this number, a house four or five feet square, with roosts around three sides, will be large enough. If the floor should be sunk two feet below the surface, it would be warmer than if level with the ground. A few

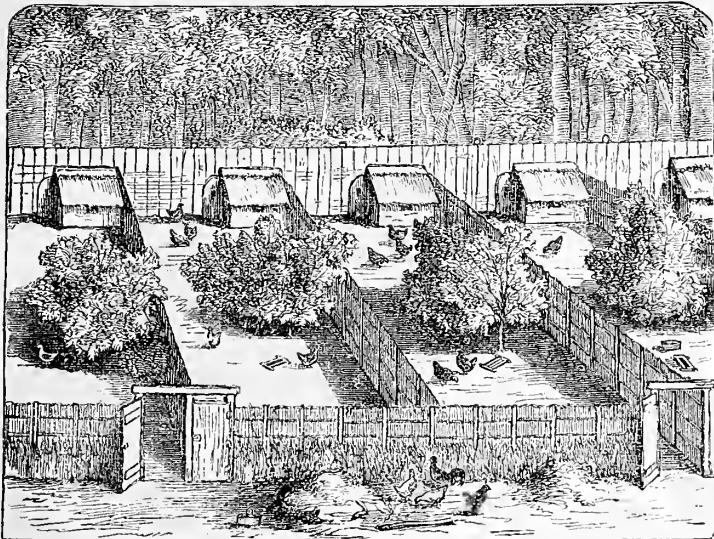


Fig. 2.—ELEVATION OF CHICKEN YARD.

nest boxes may be hung upon the wall, so that the eggs can be removed through the window as well as the door. In the summer the window would be removed. A few nesting places may be made amongst the bushes, or trees planted in each yard. The ground plan is shown at fig. 1, on p. 56. Each yard may be 12 feet wide by 25 or 30 feet long. It will be found much better to keep the fowls in small families, of a few hens with one cock, than to have them all together in one yard; the cocks may then be changed each year. The doors to the yards are made in pairs, thus saving cost in making the frames. When desired, one lot of fowls may be given a run outside by leaving a gate open.

Hints and Helps for Farmers.

A FEED TROUGH FOR PIGS.—This (fig. 1) opens by a falling door in the front of the pen, and has an inner dividing board and partitions in the front, by which the pigs are prevented from fouling the meal, or fighting each other away. In this trough the meal can be kept before the pigs all the time, so that they can eat when they wish. There is a watering trough used with this pen, so arranged that one end is within, and the other outside of the pen. One pig, only, can drink at a time, and the water is not fouled. With meal and water, ready at all times, 2½ pounds of flesh has been put upon a pig in a single day.

FEED TROUGHS FOR POULTRY.—“W. L.,” Pontiac, Mich- igan, sends a drawing of a feed trough, (fig. 2), which he uses for his chickens. It is made of narrow boards with square ends, and to prevent the fowls from getting into the trough, and wasting the feed, he fastens a small post at

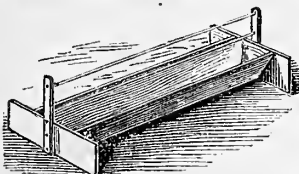


Fig. 2.—FEED TROUGH.

each end, and runs two cords, or wires, from one to the other, as seen in the engraving. This device is not so effective as that of the iron feed trough made by J. S. Spence's Sons, of Guilford, Ct.



Fig. 3.—IRON FEED TROUGH.

This, shown at figure 3, is of cast iron; it is provided with three flanges on the edges, two of which are double, and are tightened with screws. The wire cover, shown in the engraving, is fastened to these flanges, and prevents the fowls from wasting the feed. A large size may be used for feeding pigs. The troughs being of iron, and painted, are very cleanly and indestructible. We have used several of these feed troughs in our yards, and find the saving of feed will pay for them in one season.

A USEFUL FARM GATE.

—J. B. Berry, Casper Co., Mo., sends a plan for a farm gate, which he has had in use for 10 years, and which he made as follows: The posts (A, A, figure 4,) are of white oak sticks 11 feet long, and large enough to square 12 inches; these are squared for 7 feet, leaving 4 feet rough and round; the bark being taken off, the rough ends are set in the ground 10 feet apart, and 4 feet deep. The post holes are filled with dry earth, well tamped all the way up. In loose soil, it is wise to set a sill between the posts near the surface of the ground, to prevent sagging, but in compact soil this is not necessary. The 6 bars are 10½ feet long and 6 inches

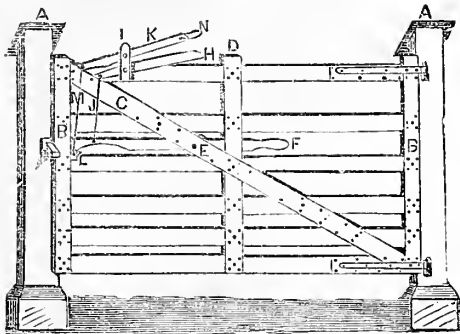


Fig. 4.—PLAN FOR FARM GATE.

wide; the uprights at the ends (B, B,) are 6 feet long. These are arranged and bolted together at every lap, as shown in the engraving. A brace (C,) 11 feet long, is bolted on to the bars upon each side wherever they cross. The upright slat, D, is then

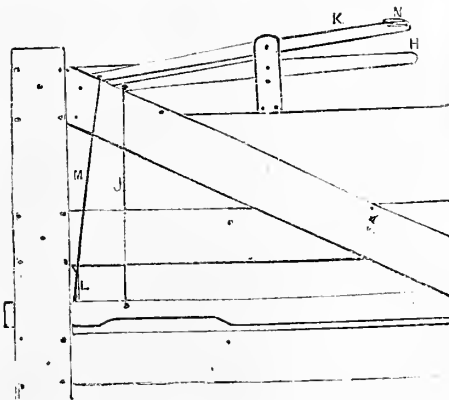


Fig. 5.—LOCK FOR GATE SHUT.

bolted on. The latch is 7 feet long, 4 inches wide, and thin enough to work easily between the braces where it is pivoted at E. It is raised by pressing on the handle, F. The hinges are then bolted on to

the side from the post, so that the gate will open completely back. They are seated upon pieces of wood fitted to the upper and lower bars to make them level with the upright bar. To prevent the latch being lifted by animals, a lock, L, is fixed to the gate. This is connected by a wire, M, to the lever, K. Another lever, H, is pivoted at I, and connected with the latch by a wire, J. When the

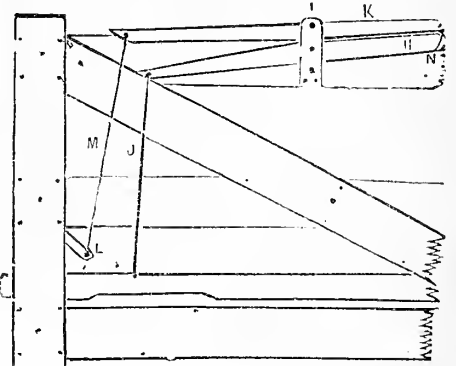


Fig. 6.—LOCK WHEN OPENING.

lock is out of use, the loop, N, is slipped over the lever, H; the latch will then work as if there was no lock. For the catch, a piece of 2 x 3 stuff is cut, as shown at A, B, C, fig. 7; the slope, B, being 4½



Fig. 7.—FORM OF CATCH.

inches long, the catch 1 inch deep, and the stem, C, 2 inches square. The lock, when closed, is shown at figure 5, and when open at figure 6.

A BRACE FOR A SLED TONGUE.—“J. K.,” Sullivan County, New York, gives a description of a brace for the tongue of a sled, shown at figure 8. This is made of two short chains, one at each side of a ring, which slips over the tongue, and rests against an iron bolt. The chains are hooked to the rings which are fastened on to the ends of the roller, as shown in the engraving.

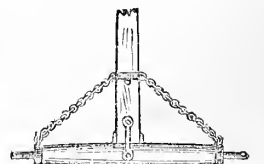
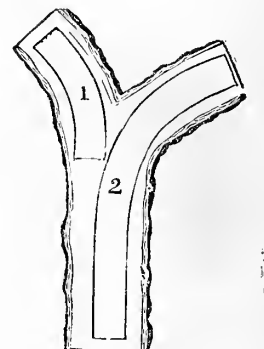


Fig. 8.—SLED BRACE.

The Value of Crooked Timber.

When timber was plentiful many years ago, it was used without any thought of economy, or of the time when it would be worth saving. Then it was customary to use the finest pine, cherry, and walnut for fence-rails, and to split into slabs for making and flooring stables and pig pens; the best of the timber was used for this purpose, because it was most easily split, and made the smoothest and broadest slabs. Now timber is scarce and valuable, but we have not yet learned to use what is left to the best advantage. We use the straight timber for sawing, and burn everything that is crooked. For some purposes crooked timber is most valuable. Where it will pay to freight timber to places where ships are built, crooked timber is more valuable than any other. For ships' ribs, knees, etc., various kinds of bent timber are in great demand. But there are various uses for crooked timber on the farm, or for house-building.



Figs. 1 and 2.

A brace of bent timber of such shapes as are shown at figures 1, 2, and 5, would answer every purpose in a building that a straight one would do, and for supporting beams the forms shown at figures 3 and 4 would, altered slightly to make them right-angled,

serve as substitutes for braces, or if of light timber, would answer to fasten to rafters as feet to sustain the thrust of the roof against the plates. We have become accustomed to building with very light timber, and our houses and barns are worn

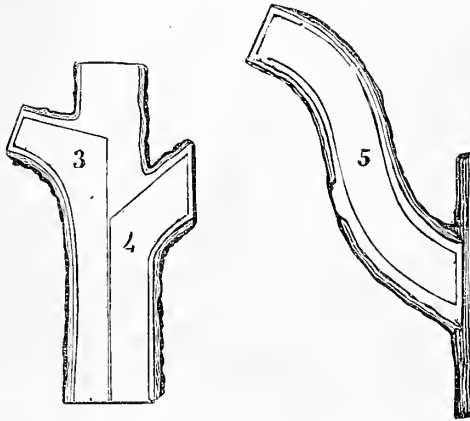


Fig. 3 and 4.

Fig. 5.

out and wrecked, before the generation which built them has passed away. By making use of heavier timbers, and working into them such crooked pieces for the purposes mentioned, our buildings would be many times more durable than they now are, and a farmer might then build a barn, which would last and be used by his grandchildren.

The mode in which such crooked timber is brought into proper shape for use, is as follows.

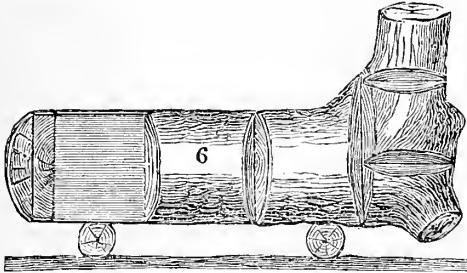


Fig. 6.—HEWING A KNEE.

The rough pieces, which are generally the roots, limbs, and crotches of trees, are laid upon some cross-piece and blocked up firmly, or are held so by "dogs," which grip the logs. The dogs are bars of iron half an inch thick, bent and pointed at the ends as shown at figure 7, and in use at *a*, figure 8.

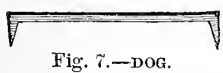


Fig. 7.—DOG.

The timber is lined on the top with a chalk line upon the bark, which has been first "rossed" with the axe or adze, and is then notched down to the line, as shown in figure 6, at intervals of one or two feet—the distance depending upon the difficulty or ease with which the wood is split. The slabs between the notches are split off with the axe, as seen at the upper end of the piece shown in the figure.

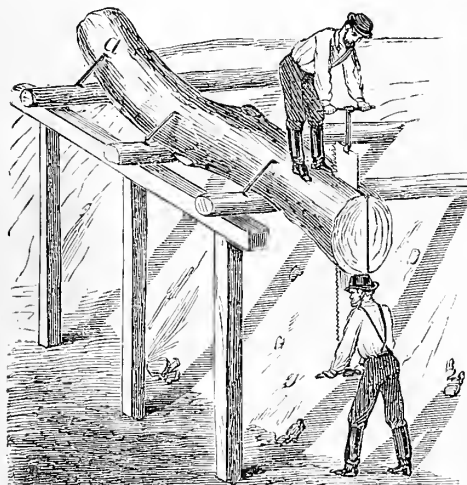


Fig. 8.—THE SAW-PIT.

When all the slabs are split off, the surface is hewed smoothly with the broad-axe. This is being done on both sides, the timber is laid down, and the edges

are treated in the same manner. Where there is a hill-side, a saw pit may be made, as shown at figure 8. A few posts are set in the ground a short distance down the hill, and a timber is mortised or bolted upon them. Three or four timbers are laid from the bank so as to rest upon the frame below, as shown in figure 8. The log is rolled on to these cross timbers, and blocked or spiked fast with the dogs. A whip-saw is used to bring the timber into a finished condition. When the saw reaches one of the cross pieces, the log is lifted with bars so as to free the timber, and it is moved from before to behind the saw, and so on until the work is complete. Where a mill is distant and time can be devoted to it, a saw-pit of this kind may be made very useful upon many farms where there is timber to be cut for buildings, fences, posts, or other purposes.

Plan of a Saw Mill.

Several correspondents have requested a plan for a saw mill. This is an evidence of the fact that the *American Agriculturist*, while it is still, as it always has been, a journal for farmers and others engaged in the different branches of agriculture, is also extensively read by persons occupied in mechanical and other industries, many of whom are engaged in lumbering and saw-milling. When one of the common run of saw mills is examined by an expert at this business, there is evident a very frequent want of convenient and economical arrangement, and a great waste of power, both in consequence of the bad arrangement and the cumbrous, heavy, ill-constructed, machinery used. The old-fashioned overshot wheel, which utilizes only 50 per cent, or less, of the power, is generally found in country mills, in place of iron turbine wheels of the best construction, by which 75 per cent of the actual power is utilized, or instead of a well constructed steam engine, which can be fed and run at an almost nominal expense, by using the sawdust and other waste of the mill, and is not stopped by low water or freshets. The cheapest is not always the most economical. Utility and economy in use are to be considered before cheapness in the first cost, and there are now so many improvements in machinery, that can be had at so little comparative cost, that the miller can not afford to do without them. As an instance of this might be cited the "self-sets," by which, at one movement of a lever, or a winch, or in some by an automatic movement, the log can be set precisely at the proper point to cut a board or plank of any required thickness, with certainty; while by the ordinary "setting-bar" time must be taken to loosen the "dogs," move the log, adjust it by a measure, tighten the dogs, and then repeat

all this at the other end of the log; in the meantime the machinery has lost its momentum, and time must be given to restore this. The cost of the "self-sets" may be saved in a one-saw mill in one month, by the mere gain of time.

The plan here given is for the interior arrangement of a cheap frame mill, to be run by water or steam-power. The building is intended to be made in a bank or hill-side, so that the upper floor may be on a level with the log yard or pond and roll-way, and the basement may be occupied by lath and shingle mills, and the engines, if steam-power be used. In this case the boiler would be placed in the cellar, and all the waste of the mill would be carried through well-holes, slides, or hatchways, to the furnace. The principal floor is shown at figure 1. This is open at the front for seven feet in height,

and may be closed by drop doors. The floor should be at least 30 feet wide for a mill having all the machinery which is necessary to economical working. The length will have to be in proportion to the kind of timber sawed. A carriage of 30 to 36 feet long, will necessarily require a mill of at least double that length, and if any other machinery is used upon this floor, additional room will have to be provided for it. In the plan here given, the log-way (*a*) is at the side. The logs may be rolled in to the mill from a skid-way at the side, or may be drawn in at the front by means of a "bull wheel" and chain at the rear of the log-way. The carriage (*b*) is mounted on wheels, and runs on rails, by which less power is required than when the slide-ways are used.

The saw (*c*) is either a gate, a muley, or a circular saw; where hard wood is chiefly cut, the first is generally used, as being less likely to "run," than the muley or the circular saw, and needing less skill to work one passably well. At *d* is the gearing for the feed, and at *e* is the board-car and railway upon which it runs, either to the board piles in front or rear of the mill, or to the planing mill (*p*) in the rear. The rough edged boards from the sides of the logs, are edged on the table (*f*), and the slabs are run upon the board-car to the slab-saw (*g*), where they are cut into 4 feet lengths and thrown down the well (*h*) and slide (*i*) to the floor below, to be cut into laths. The edgings and thin slabs, when steam is used, are thrown down a hatchway to the cellar, where they are consumed under the boiler. Figure 2 is a plan of the lower floor, upon which is the slide (*i*) for the cut slabs, the "bolting" saw, and the lath-saw (*j*). In the rear of each of these saws a "horse" (*k*, *l*), is provided, upon which the bolts and laths are placed as they are sawed. When a bundle (50 or 100) of laths is sawed, they are tied up and the bundle placed upon a pile near by. A shingle mill may be placed at *g*, and supplied by the best of the slabs. The waste from these saws goes down the hatchway (*m*) into the cellar. The steam-engine (*o*) is above the boiler, and the large pulley and gears (*n*) are below the saws. Where the mill is run by water-power, this waste should be run out upon a truck and railway to a safe distance, where it is burned every day, so that it may not accumulate and endanger the mill by risk of fire. The shafting by which these saws are run, should go under the floor so as to avoid accident. There is now a great economy in purchasing what are known in the trade as complete saw mills. These are furnished by the manufacturers complete in every detail, from the engine and boiler to the belting by which the machinery is operated; so that it is only necessary to provide a suitable building to hold the machinery. There are several manufacturers who make a special business of supplying the machinery and fittings of saw mills, from whom estimates may be procured for outfits of all kinds, from the most simple up to the most complete.

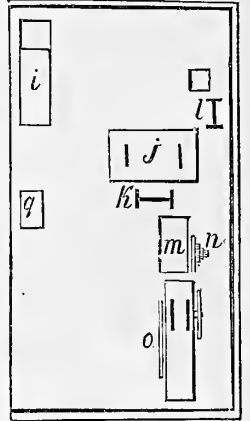


Fig. 2.—LOWER FLOOR.

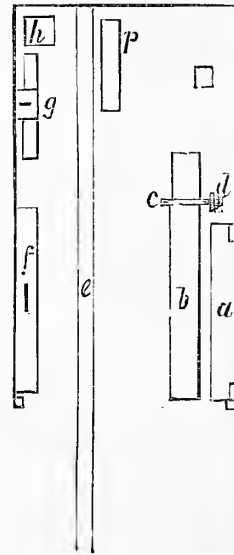


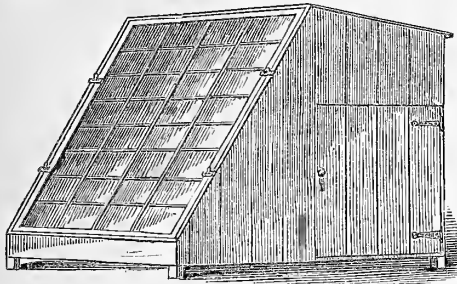
Fig. 1.—PRINCIPAL FLOOR.

NO NEED FOR INTERIOR FENCES.—The interior fences of farms occupy more space and cost more money, than the outer fences, while they are almost entirely unnecessary. In the majority of cases pasturing the cultivated land costs many times more than the little gain derived from it. The pasturing of mowing lands, and newly seeded stubbles, as a rule, is very injurious, and when, under exceptional circumstances, this is desirable, a temporary fence, of portable hurdles, might be profitably used. It may be beneficial to have a permanent pasture lot upon every farm, and where there is a roughish piece of land, it may be so used. But it will be found far more profitable to fence a

small plot in a convenient place for the stock, and feed them there with green-fodder grown and ent especially for them, than to make a practice of indiscriminate pasturing, with the necessary maintenance of interior fencing at a high cost.

A Hatching Coop for Winter Use.

Early chickens are very desirable, but they are troublesome to raise in the winter. To overcome the difficulty, and keep the young chicks sufficiently warm during very cold weather, we have provided a few coops of the style shown in the accompanying engraving. It is 4 feet long and 3 wide, and 4 feet high, which is large enough to give ample ventilation when it is temporarily closed. The nest is



A HATCHING COOP FOR WINTER.

made in one corner of the coop, and when the chicks are hatched, they may be confined in it when necessary. The front is a common hot-bed sash, 3x4 feet, and can be raised or removed at pleasure. The coop is placed in a corner of the poultry-house near the glass front, and being thus thoroughly warmed during the day, will retain sufficient warmth during the night. In the coldest weather a blanket or mat may be thrown over the coop.

A Village Improvement Association.—What has been Done in Litchfield, Ct.

In several villages of New England, there have been established of late, what are known as Village Improvement Associations or Companies. These consist of a number of public spirited, energetic, and liberal people—both ladies and gentlemen—who associate themselves under the operation of a State law, which regulates the formation of joint-stock companies without capital, for the purpose of improving the condition of the streets, side-walks, crossings, public squares, fences, shade-trees, and other conveniences and adornments of the villages. Every resident of a village knows how slowly reforms and improvements of this character are effected, and how difficult it is to induce some persons to see their interest in beautifying or improving, either their own or the public property. It is true, what is the business of nobody in particular, goes undone very easily, and that it is only by a great effort on the part of the more enterprising and enthusiastic citizens, that the indolence, or inertia rather, of the majority is overcome, and a course of improvement is set in action. The benefit accruing from the precept and examples of these enterprising people, are very great indeed; cleanliness, neatness, and order, are provocative of sobriety, industry, and thrift, and these again, tend towards a higher condition of morality. So that morality and comfort, as well as agreeable appearance, if not elegance, result from the operation of these village improvement associations. While they are desirable everywhere, they are still more useful and effective in those places where a large portion of the summer business is, to entertain strangers from the large towns and cities. These people are greatly attracted by clean streets, smooth walks, green lawns, bright gardens, neat houses, and the certainty of general order and respectability which these things indicate. Without distinguishing any one place in particular, there are many such villages as are referred to, which at first sight put the stranger upon good terms with them; while there are many which sadly need the

reforming influence of an improvement society, for their own good and for the comfort of those who visit them. For the benefit of the latter we give some account of the operations of the Litchfield (Conn.) Village Improvement Company. What has been done will speak for itself, and may serve to form a model for other villages to copy.

This Association was formed in April, 1875, and consisted at first of about 100 members. The first season there was expended \$2,147.73 in the following manner: 10,478 feet of concrete side-walk was laid; street crossings were made of stone, where formerly there was deep mud in wet weather, and deep dust in dry weather; seats were put up in the public parks; wooden bridges, (culverts we suppose are meant), were made; rubbish was removed, and railings were repaired. To meet these expenses \$1,412.29 was raised; of this sum, \$177 was from members fees; \$714.08 from entertainments of various kinds; \$129.83 from donations, and \$391.33 from repayments for side-walks. A debt was thus left to be carried over to the next season. The entertainments consisted of lectures, readings, and strawberry festivals, and were certainly liberally patronized. These, in themselves, were undoubtedly valuable aids to improvement, though not included in the original bill. In the winter of 1875-'76, walks were cleared of snow, and such shade trees as were broken or endangered by a severe ice storm, were trimmed. \$567.59 was expended that winter. During the second year \$2,214.91 was expended and the sum of \$1,923.69 was raised by similar methods to those already mentioned.

Besides all this work, much was done by private individuals, in emulation of the Improvement Company. Thus the example given by the Association, has led to a general disposition to improve the condition of private property, and as nothing is more infectious than a taste for flowers, green lawns, neatly kept foot-paths, and fences, the desire to improve spreads beyond the village, and the farmers outside begin very soon to adopt the general custom. It is easy to conceive how far this may go when it is once started, and what an immense influence for good is exerted far and wide. In beginning this improvement, it is the first step which is the most difficult, and this must be taken by one energetic and experienced person. This was the case in the instance here referred to, but it was fortunate that his efforts were readily supported by others. It is to be hoped that this example may be copied in many villages, and although it may not always be possible to enlist so large a company of helpers, yet a small beginning should not lead to discouragement, as proportionate success may be achieved. The profits resulting from these improvements, are far greater than the original cost. Not only is there a direct value received for the money expended, in the increased worth of the property benefited, but there is, besides, not estimating the resulting comfort and satisfaction, a large extra value added. A well kept garden, neat fences and gates, and shade trees, add to a village lot or a farm, many times their cost, so that no more profitable outlay than this can be made.

A Bolster Spring for Farm Wagons.

A new Bolster Spring is shown in the accompanying engravings, which possesses several good qualities, not the least of which is, that a set may be bought at a moderate price, and attached to the

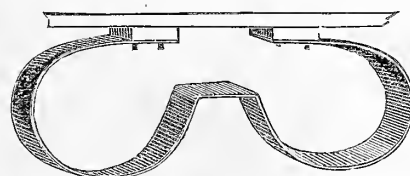


Fig. 1.—SPRING FOR WAGON BOLSTER.

wagon by the farmer himself. The desirability of having springs to wagons for heavy work need not be urged; the saving in wear and tear of both wagon and wheels is large on even good roads, and as our roads are generally the reverse of good,

there are but few localities in which these springs would not pay for their cost in the increased durability of the vehicle. The springs, figure 1, are attached to the wagon-box, as shown in figure 2, and rest upon the bolster; such is their shape, that the box is raised only three inches above the bolster. The springs can not break, as before their whole tension is exercised, the weight of the load rests upon the bolster, and thus the springs are relieved from sudden jerks caused by stones or

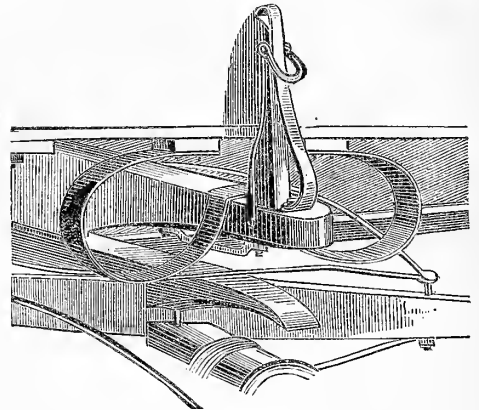


Fig. 2.—THE BOLSTER SPRING ATTACHED.

ruts in the road. The use of these obviates the necessity for having springs to the wagon seat; they are made to carry from 2,000 to 5,000 lbs. the set. This very recent invention, which will meet a general want, is just brought out by the makers, Semple, Birge & Co., of St. Louis, Mo., widely known as builders of wagons and farm machinery.

The Hereford Breed of Cattle.

BY T. L. MILLER, BEECHER, ILL.

In an article in the *American Agriculturist* for November last, accompanying an engraving of the Hereford bull "Little Bill," it is stated that the Hereford is "second only to the Shorthorn as a beef animal, when kept under equally favorable circumstances." I have now been a breeder of Herefords for several years, and there is no place where the Shorthorn can excel the Hereford. The Shorthorn shows at his best when on the richest food, and all he will take of it, from the time he is dropped until he goes to the butcher. Even here the Hereford will make as large gains as the Shorthorn, and do it on twenty-five per cent less feed. And the larger portion of the writers on cattle, when they touch this point at all, admit a difference in favor of the Hereford. The only place where the Hereford and Shorthorn have an opportunity to test this, has been at the celebrated cattle fairs at Smithfield, Eng. For nearly the whole time, from 1799 up to 1851, the two breeds were shown in the same classes—in fact, all breeds were shown together—and the Hereford oxen, or steers, as fat cattle, took 185 premiums, as against the 82 by the Shorthorns. The Herefords were formed in the hands of Mr. B. Tompkins, commencing in 1766, and fairly established 1776—about the same time Charles & Robert Colling were improving the Shorthorns. As a rule, the feeders and breeders that show at Smithfield, have fed high, and it is fair to presume that the two breeds have made the best weights and quality that could be made, while the Herefords took nearly twice as many premiums as the Shorthorns, and nearly twice as much money. If the test could have been made as to the cost of producing these weights, then the Herefords would have shown at least twenty-five per cent better than the Shorthorns, and many of the feeders of Herefords would claim a greater difference than this. A late Shorthorn paper admits these facts in favor of Herefords at three years and over, and claim an advantage for the Shorthorn at two. The same article admits that Hereford beef in the London market, at three and over, is worth more than Shorthorn beef, and that every where good butchers will pay more for Hereford than for Shorthorn beef. Now, what are the facts, we will take Smithfield again. The beef steers are

shown in classes as follows:—Under 2 years and 6 months; over 2 years and 6 months, under 3 years and 3 months; over 3 years and 3 months, under 4 years and 6 months. In 1869, in the youngest and oldest classes, the Herefords were the heaviest, but the difference of weight at the Smithfield between the Herefords and Shorthorns, is trifling, and is

of the dairy, are appearing almost daily, and in this respect dairying is not at all behind any other skilled handicraft. But to curdle the milk, rennet—the stomach of the calf—is still used; and the curd is heated in the vats, broken up; drained, ground, salted, and pressed, the same now as in the old-fashioned dairies. The greater economy of

test; this is to take a bar, or rod, of iron heated to a point somewhat less than a dull red heat, and bring it into contact with a piece of curd. If, when the hot-iron is drawn from the curd, it brings with it a quantity of glutinous strings, the curd is ready for removal from the vats. It is dipped out from these with the curd dipper, a pail having a flat side,

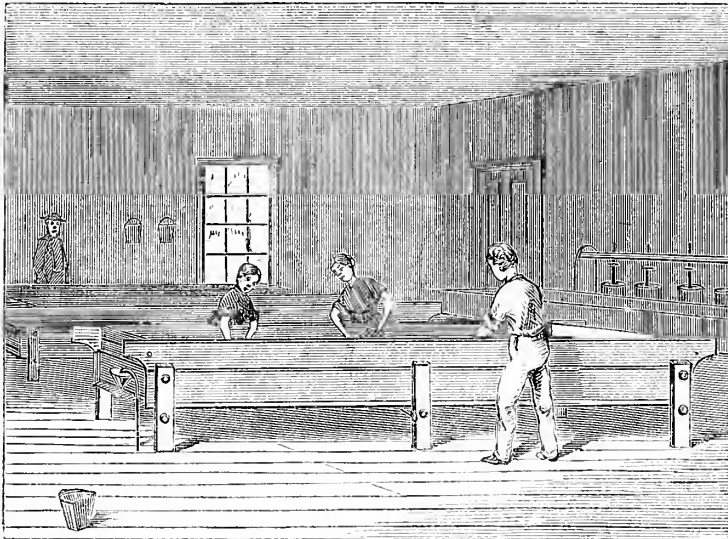


Fig. 3.—STIRRING THE CURD.

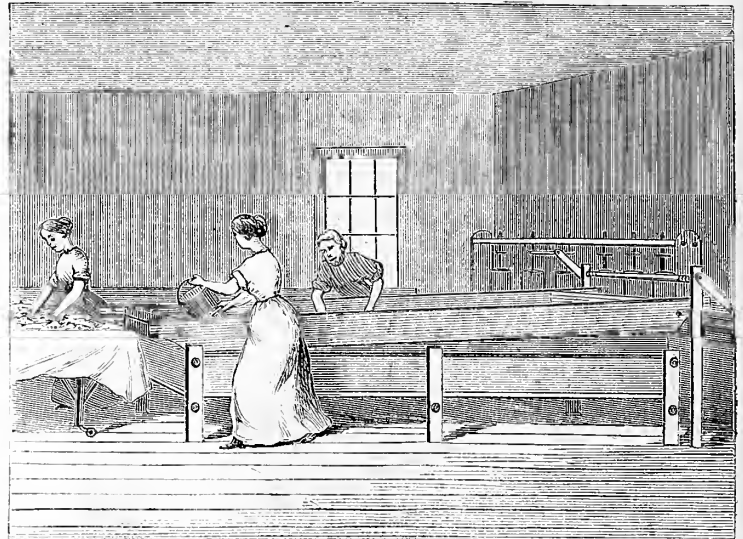


Fig. 4.—TAKING CURD FROM THE VATS.

as often with one as the other. The great difference between the Hereford and Shorthorn is in the cost of production and the value of the product. The cost of production is one-fourth in favor of the Hereford. The product is worth from ten per cent to fifteen per cent in the Hereford more than in the Shorthorn steer, and these points should always be borne in mind. And again, the Hereford can be grazed and fitted for the butcher on pastures that would not keep a Shorthorn even in good store condition. These facts can be sustained.

[While Mr. M. may believe the above to be all perfectly true, yet the fact that there are hundred Shorthorn herds in existence for one of Herefords, must be taken to prove that, for some very good reasons, the Shorthorn is superior to the Hereford. Fashion must have something to back it.—ED.]

The Process of Cheese Making.

The establishment of the factory system in the cheese dairy, has made no change in the method of

labor in the factory, however, is seen at once in glancing over the apparatus used. After the receiving and weighing of the milk, as shown in an illustration upon page 53, it is run into vats, which hold about 600 gallons each. In these the milk is warmed to about 80°, the proper temperature for coagulation; it is then well stirred to ensure the even distribution of heat, and the rennet is added and thoroughly mingled by stirring. The curdling is complete in 40 to 60 minutes, when the mass is stirred, or broken (fig. 3), by a many bladed curd knife into small blocks to facilitate its separation from the whey. When the curd has acquired sufficient firmness, it is more thoroughly broken, either by the hands or by what is known as an agitator. After the curd is broken up, heat is applied by means of steam pipes until the whey and curd together are brought to a temperature of about 100 degrees. During this heating the curd is stirred, and after the "cooking" is complete, it is left to rest, with occasional stirrings, until a proper degree of acidity, or rather approach to acidity, is observed in the whey. The whey is then drawn off, and the

into a cooler, the vat being tipped by means of winches. This is shown at figure 4. The curd is left here to cool for a few minutes, when it is turned over and again left, to acquire a certain mellowness. It is then pressed for 10 minutes, when it is taken out, ground in the curd mill, (fig. 5,) and salted; two pounds of salt being used for 100 pounds of curd. The proper temperature of the curd is kept up during these processes by covering it with a cloth. After having been ground, and salted, the curd is put into the presses, (fig. 6,) in which it remains under pressure for two or three days. The pressure, which is regulated by means of a screw, should be sufficient to force out the whey, and consolidate the cheese. It is obvious that much tact and experience are needed to produce cheese of first quality, when it is considered what a multitude of interfering and complicated changes may occur in the condition of the curd, through atmospheric effects, the quality of the milk, or the rennet, or unavoidable difficulties in securing the precise degrees of heat or fermentation of the curd. But in the well managed cheese factory all danger of

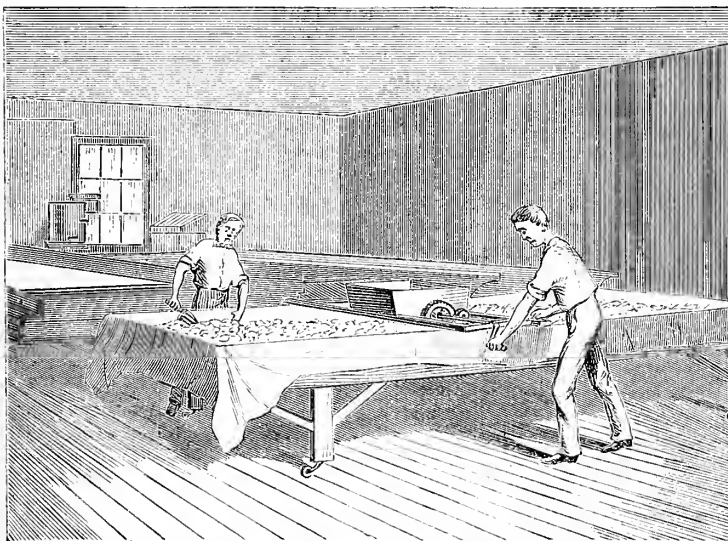


Fig. 5.—GRINDING THE CURD.

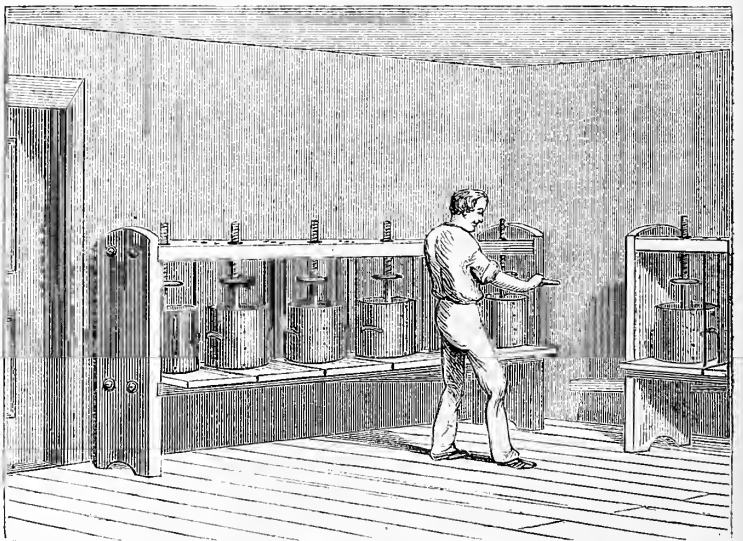


Fig. 6.—PRESSING THE CHEESE.

producing the curd from the milk, or the cheese from the curd. The improvements have been wholly in the machinery used in the processes; and in this respect the apparatus of the factories is constantly changing for the better. New contrivances for performing labor more easily, or for securing greater cleanliness or effectiveness in the methods

curd is heaped in the vats and left to become sour. Upon the exact degree of acid that is developed in the curd, depends, in a great measure, the quality of the cheese; and the skillful practice of an experienced cheese maker is perhaps more needed just here than in any other part of the process. Those who need it can use what is known as the hot-iron

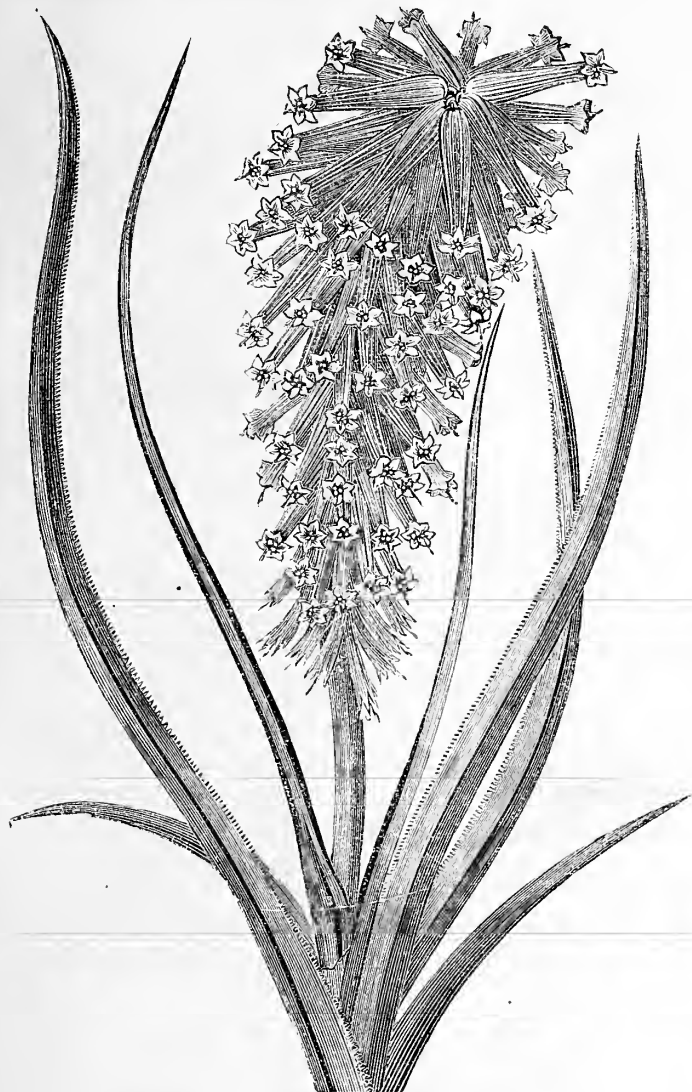
failure is reduced to a minimum, as compared with the chances of a hundred small dairies all differently managed, and without the machinery needed for accurate manipulation. It is on account of this uniformity in quality that the American factory cheese fills a place in the markets of the world that no other dairy product has ever done, or is likely to do.

Macowan's Flame Flower.

The well known *Tritoma Uvaria*, its varieties and allies, is justly valued for its brilliant spikes which give a brilliancy to the garden in the autumn months. We are indebted to England for the common name, "Red-hot Poker Plant," which is

soft orange color, which is very pleasing. The plant seems to be a remarkably free flowerer, and its season is evidently a long one. The stems of tall species, unless staked, are apt to be bent by the weight of the flower spikes, and the autumnal storms frequently make sad work with them, accidents from which this species is likely to be free. When first introduced into England, it was grown

servedly one of the most popular of ornamental-leaved bedding and pot-plants; and being easily propagated, a sufficient stock is quickly obtained to meet the great demand which a desirable novelty like this is sure to create. The now well-known variety called "The Shah," which for some time after its introduction seemed to be "under a cloud," has at length proved to be invaluable for bedding



MACOWAN'S FLAME FLOWER.—(*Tritoma Macowani*.)



MANY-COLORED COLEUS.—(*Coleus multicolor*.)

more descriptive than elegant, and when the English, as we see by their journals they are disposed to do, change this awkward name to "Flame Flower," we are quite ready to accept the amendment, with thanks. The plants were originally placed in the genus *Kniphophia*, but later a portion of them were separated to make another genus, *Tritoma*. We notice that English writers are of late inclined to restore these, and to call them all *Kniphophia*. As the name *Tritoma* is well established in our gardens and catalogues, we retain it until we can examine into the reasons for discarding it for the other. Our purpose is not to discuss names, but to call attention to a new species, so recently introduced into cultivation, that it is quite a rarity abroad, and which we saw last October flowering finely in the hardy herbaceous collection of Messrs. Woolson & Co., Passaic, N. J. This species was discovered by Prof. Macowan, in the mountains of South Africa, at an elevation of 4,500 feet above the sea, and was named in his honor, *Tritoma Macowani*. With the same general appearance as the tall-growing *Tritomas*, which have been so long in cultivation, it is much more delicate, and smaller. The leaves differ from those of the other species in being more rigid, and in having their edges roughened by minute teeth. The flower stems are not much over a foot high, (the English descriptions say from 1 to 2 feet,) and bear at the summit a spike of reflexed flowers, which, while they have not the fiery aspect of the other species, are sufficiently brilliant, being of a very rich and

only as a conservatory plant, for which use it is well adapted. It has proved quite hardy with Herr Max Leichtlin at Baden Baden, Germany, and in some English gardens, and will be tested by Woolson & Co. the present winter. The other species of Flame Flower are usually hardy in the climate of New York, if given a covering of litter, and this species of Macowan is so desirable that, if not absolutely hardy, it will be worth the slight protection required by the others.

A New Coleus.—C. Multicolor.

BY W. C. BARRY, ROCHESTER, N. Y.

[Last fall we saw at Ellwanger & Barry's a new Coleus, which Wm. C. and Charles Barry, who had recently returned from Europe, had brought over "by hand," so to speak, as they had cared for it in their state-room during the voyage. The variety being quite new, we requested Mr. Barry to furnish us, when the plant should be sufficiently recovered from the effects of travel, with materials for an engraving; this he has done, and at the same time sends the accompanying notes.—ED.]

Of the many Plant "Novelties" which I had the pleasure of seeing while abroad the past summer, I think that the most interesting and valuable was *Coleus multicolor*. Interesting, because of its curious, distinct, and beautiful foliage; valuable, for the reason that in this climate the Coleus is de-

out as well as for pot culture. The "Chamelcon," another beautiful variety, about which there was some question as to its value, has won its way to popular favor, and is now considered indispensable in every collection. The new species, the form of which is represented by the engraving, is very appropriately called *multicolor*, on account of the many colors which are presented in its leaves. Although quite distinct from either of the varieties mentioned above, it seems to partake to some extent of the peculiarities of both, so much so as to suggest that it may have originated from them. It is claimed for it, however, that it is a distinct species, and a native of the Solomon Islands. It was introduced to the trade last spring by the celebrated firm of Veitch & Sons, London, who describe it as follows:—"In form the leaves differ chiefly from the usual type in having the teeth of the edges greatly elongated and rounded at the tips. In color it is remarkable for the number of rich shades of crimson, red, rose, etc., into which the leaves sport; some of the young leaves having also a bright yellow for the ground color marked with rose or red. All the shades of color in the foliage contrast finely with the bright green of the stem and foot stalks. It is a very beautiful plant, and will be found among the most useful of its tribe for decoration. It received a First Class Certificate from the Royal Horticultural Society, May 2nd. Also a Certificate of Merit from the Royal Botanic Society, April 18th."

All who have seen the new Coleus pronounce it a valuable acquisition to the list of plants with orna-

mental foliage, and if we mistake not, it is destined to meet with a cordial reception in this country by all the lovers of new and beautiful plants.

Experience With Vegetables in 1877.

BY PETER HENDERSON.

[As an aid to those who, bewildered by the great variety offered by the catalogues, find it difficult to make a selection of vegetables, we have usually given in February a list of those we regard as reliable. While it is desirable that the main crops should be of sorts, the value of which is well established, we would not discourage the trial of novelties, of which many are offered every year, the testing of these in comparison with the older kinds adds much to the interest of gardening. This year, Mr. Henderson gives us the results of his experience, which in the main agrees with our own.—ED.]

For a number of years past we have set apart a piece of our ground on Jersey City Heights, N. J., for testing the relative merits of all the leading kinds of vegetables in general use. Every class is treated exactly alike. All of each class are sown the same day, and in every subsequent operation, the greatest care is taken that all are treated alike, whether sown in hot-bed to be transplanted, or when sown in the open ground. Our "Trial Book" shows the following results of the various tests. We name, however, only the varieties having merit, all such as were tested and found to be inferior either in earliness or quality, are either not named here at all or merely noticed to indicate, wherein, in our estimation, the want of merit lies. About an average of 25 varieties of each kind of vegetables were tested, and at least 50 plants of each variety:

Beans, Bush.—Early Mohawk is a few days earlier than Valentine, which is yet the best for general crop. Black Wax is a fine stringless variety. Refugee, late and largely used for pickling.

Beans, Pole.—Large Lima is still the favorite. Dutch Case Knife is also an excellent sort, and the Giant Wax is a stringless snap bean, but a climber.

Beets.—For first early we find Egyptian best, next the Blood Turnip, and for late the Long Blood. Bassano is early, but objectionable for market, on account of its very light color.

Mangels and Sugar-Beets.—In an impartial trial of the four best known sorts, Norbiton Giant gave 20 per cent more weight per acre than any other.

Cabbages.—The seeds were sown in hot-bed on March 1st, and the plants set out in the open ground the first week in April. The Early Wakefield still stands unrivalled as earliest and best of its size, it being in fine marketable order on June 15. Early Summer, however, that came only one week later, was double the weight, and equally uniform in heading. This we find is becoming the favorite large early variety in almost every section of the country. It has only been introduced into general cultivation within the past four years, though it has been grown for nearly 20 years by one of our best Long Island farmers, who had a monopoly of it up to that time. Next in value, as a second early, comes the Winningstadt, a well known pyramidal-shaped variety of great solidity. Next in order came Early Flat Dutch, which, by middle of July, gave heads of 15 lbs. weight. For the fall crop, (seed sown in May,) nothing is found better than Premium Flat Dutch. A correspondent in Pennsylvania writes that a field of 5 acres averaged 14 lbs. per head. American Drumhead Savoy is best in its class. Of cabbages for pickling, we find the Blood Red Erfurt by far the best colored.

Carrot.—French Forcing, earliest, and handsome, next Early Horn, and a newish sort called Half Long Red, of very bright color, and excellent flavor. For field crop, Improved Long Orange is best.

Cauliflowers. (sown and planted at same dates as the cabbages.)—The new variety known as Early Snowball, is the best acquisition of the season. It was a week earlier than all other sorts tried; heads of fine size, of snowy whiteness, few and short leaves, making it in every way desirable, whether for growing under glass or in the open ground. Next to this was the Extra Early Erfurt,

hitherto considered the best variety. Later, for succession, came Half Early Paris, and Le Normand's Short Stemmed, too late for early, but valuable as a fall sort.

Celery.—Probably in no vegetable cultivated has the variety so much to do with success as Celery. Our own experience, and that of scores of our immediate neighbors, is that nearly all the giant or tall-growing kinds are unprofitable to raise. Not only does their culture entail twice the labor, but they are almost always wanting in solidity and in flavor. While some hundreds of acres of Celery are now grown for the market of New York, the kinds are mainly the Half Dwarf and Dwarf Sandringham, in the proportion of four of the first to one of the second. The Boston Market variety has never been a favorite for the New York Market, as its tendency to throw up suckers, or side shoots, considered the merit of that variety in Boston, makes it objectionable here. Hood's Dwarf Red is the best variety of Celery in cultivation, but the American public, with few exceptions, will not use red Celery, while in England it is highly valued, as it should be, for it is not only much better flavored than the white sorts, but it keeps better, and surely, when used as an ornamental vegetable, as Celery often is, its bright crimson, and white color, make it more attractive than the white.

Corn.—Minnesota we find to be the earliest variety of good size. The habit is dwarf, size of ear medium, very productive, and sweet.... Large 8-rowed, second early, large size, sweet.... New Egyptian, this variety is of large size; is about as early as 8-rowed. The merit claimed for it is its excellent flavor. It has been but little grown outside of Baltimore, but has been cultivated there for several years to the exclusion of nearly all the other sorts.



EARLY SNOWBALL CAULIFLOWER.

...Stowell's Evergreen for late main crop we find nothing yet to supersede this old and reliable kind.

Cucumbers.—Early White Spine, and Green Prolific, were earliest and most prolific, while for pickling, Early Cluster and Short Green seem best.

Egg Plant.—New York Improved is rather earliest, but Black Pekin is to our taste the best flavored—they are nearly alike productive.

Endive.—Moss Curled, Green Curled, and Batavian. **Lettuce.** (sown and planted same date as cabbage.)—We find All the Year Round (one of the cabbage or Butter class) headed first. Next came the Simpson, and next for standing the hot weather best were Large White Summer, and Curled India. Boston Market, though rather small for out-door culture, is now almost exclusively grown as the best for heading under glass.

Musk Melons.—White Japan proved earliest, but for general crop Nutmeg and Green Citron are preferable. Cassaba is a large yellow kind; is of excellent flavor, and very prolific.

Onions.—Wethersfield Red, Yellow Danvers, and

White Globe, are probably the best of their colors, for general culture, though the newer kinds of the Italian varieties, such as White Tripoli, Queen, and Giant Roeca, grow finely in South and South-western States.

Parsnip.—Hollow Crowned.

Parsley.—Moss Curled and Double Curled.

Peas.—These, like Tomatoes, have so many new claimants for earliness and productiveness, that it is not easy to decide. Our tests of last season place them as follows, as near as we could judge: First, Improved Dan'l O'Rourke, next Philadelphia Extra Early, and Carter's First Crop for round peas requiring brush. Of the Dwarfs, Little Gem and Blue Peter, while for larger growing wrinkled sorts, Alpha is best and earliest; while for main late crop nothing yet we find as good as Champion of England.

Radishes.—Scarlet Turnip, Long Scarlet, and the new White Tipped Scarlet, (French seed,) are all about equally early. The last named is very distinct and pretty, and in every way desirable. Of the late or winter Radishes, the China Rose Colored, Black, and White Spanish are all good.

Spinach.—We find that the Savoy-leaved is by far the best, giving nearly twice the weight of crop on the same space. It is somewhat singular that the great value of this variety seems to have been overlooked by the market gardeners of New York, and they have only recently woken up to it on seeing it sent in by the growers from Norfolk, Va., and other Southern points.

Tomatoes.—Sown March 5th, were carefully transplanted twice, and set out in open ground May 20th. This was the most puzzling trial we made, as it was difficult to impartially pick out 3 or 4 as the best among so many. Canada Victor was, by a majority of censors, judged the earliest and best, though Conqueror and New York Market resemble it, and they are evidently all nearly allied to each other. Arlington, a valuable variety, but little later, is exceedingly prolific, large, and smooth, and this and Excelsior are the favorite varieties for canning. Trophy is late, but its other excellent qualities still leave it the field. Golden Trophy, a beautiful yellow variety, is in every way worthy of cultivation. The very early varieties, such as Little Gem, 100 Days, and Key's Prolific, ripened a few fruit 10 days before those above named, but all these varieties are worthless for market purposes, because the difference in earliness of 150 miles farther South, brings in the finer sorts, cheap enough to take their place until the better sorts ripen. I have but little hope in any farther improvement in earliness of the Tomato. We have made no advance on Key's Prolific, sent out 7 or 8 years ago, and that earliness was at the expense

of both size and quality, while in the good market sorts it is doubtful if there is anything much in advance of a good stock of New York Market, which has been in culture for 25 years.

Turnip.—Red, and White-Top Strap-leaf are earliest. Purple White Globe is nearly as early, and will prove a more marketable sort from its larger size. Yellow Globe, for second early, is one of the best for general crop. In *Ruta Bagas*, the American grown seed of the Purple and Green Top kinds proved better in every case than some half dozen kinds of imported varieties tried, with the exception of the Long White French, a variety of excellent flavor, and otherwise desirable.

The Fern-Leaved Trumpet-Flower.

Last spring, Mr. John Saul, of Washington, D. C., who has a way of sending out novelties at a very early date, sent us, among other new plants, a specimen of *Campsidium filicifolium*—a good deal of a name for such a bit of a plant, as it was. We knew

it was one of the new plants for which Mr. Bull had certificates from the London Societies, but did not give it special attention at that time. Indeed, the *Campsidium* went quite out of mind until last fall, when at Rochester, Mr. W. C. Barry called our attention to some fine specimens in the extensive greenhouses of Ellwanger & Barry. Mr. B. was quite enthusiastic over its beauty, as well he might be, and predicted for it great popularity. When we returned home, we looked for our own specimens, that came from Mr. Saul, and were glad to find it had grown to a vine two or three feet long, and clothed with leaves of the most graceful kind. The engraving will show the character of the foliage; according to the English catalogues, the leaves grow to the length of about five inches, though on our small plant they are only about half that; each leaf consists of six to twelve pairs of small leaflets, with a terminal one, these leaflets are lobed and toothed, and, being of a fine green color, the foliage has a strikingly fern-like aspect, and reminds one of some of the aspleniums. Its very beautiful foliage, and the delicate, twining stem, makes the plant a most admirable one for decorative work, especially for vases and baskets, where it can hang gracefully down the sides. It is suited to many of the uses, to which *Myrsiphyllum*



FERN-LEAVED TRUMPET-FLOWER.

(*Smilax*) is put, and is superior to that in the greater delicacy and variety of its foliage. We notice that in England it is classed with the stove-plants, but ours appears to flourish in the greenhouse. It is said to bear cutting well, pushing out a new growth freely after it had been cut back; another point in its favor is the ease with which it may be propagated from cuttings. Should it become as popular as it promises to be, no doubt our florists will soon find the best manner of managing it, to supply it in such quantities, as they now do the deservedly popular "*Smilax*." The plant is a native of the Feejee islands. A word as to the name we have adopted. The flower is not known, and when the plant was received in England, it was called a *Campsidium*, from its resemblance in habit and foliage to other species of that genus, and the descriptive specific name, *filicifolium*, or "fern-leaved," was given to it. But the best botanical authorities do not admit *Campsidium* as a genus. Benthams and Hooker find that it is not distinct from *Tecoma*, the genus of our "Trumpet-flower." Hence if, when the flowers and fruit are known, it should be found that its relationships were properly inferred, from its foliage, its correct scientific name will be *Tecoma filicifolia*, which readily Anglicises into "Fern-leaved Trumpet-flower," a name under which it will stand a much better chance for popularity, than if it is to be *Campsidium filicifolium*. But our name, like that, depends upon an if.

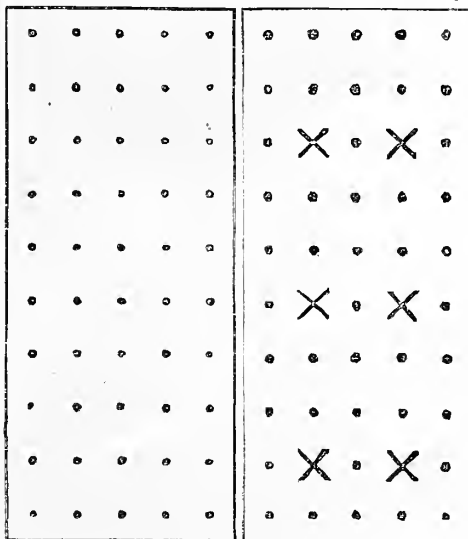
THE PAMPAS GRASS.—The plumes of this stately grass have been sent from California this fall in large numbers, to New York and other Eastern cities. Nothing can be finer in the way of orna-

mental grasses, than these spikes, about a yard long, of a dense wavy mass of silken florets and hairs, of nearly pure white. This grass (*Gynerium argenteum*) is dioecious, the pistillate or female spikes, being greatly inferior to the staminate in size and silkiness, so much so that some dealers supposed that another grass had been sent to them. The Pampas Grass must be cultivated largely in California, probably expressly for these plumes, which appear as if they had been exposed to sulphur fumes, as they are much whiter than we have seen them elsewhere. The first consignment sold at \$3 for a pair of plumes, but later they came in such quantities and so variable in quality that dealers offered them at \$1 and less. This grass is scarcely hardy at New York, though it may usually be kept through the winter by giving the roots a covering. A cask placed over the clump, filled with leaves, and covered with boards to shed rain, makes a not very slightly, but an efficient covering.

A Double Crop—Cauliflower and Lettuce.

BY PETER HENDERSON.

In the vicinity of our large cities there are acres of glass devoted to the forcing, or forwarding, of lettuce, radishes, etc. The principal crop, however, is lettuce, which is raised during the winter months, either in the old-fashioned hot-beds, heated with stable manure, or else in the more recent greenhouses, heated by hot water pipes. But by far the largest quantity of early or forced lettuce is grown in the "cold frames," such as are used for keeping the plants over winter. These are simply two boards set on edge, and placed parallel to one another. The one at the back being about 1 foot in height, the front one about 9 inches; the distance apart being according to the length of the sash, which is usually 6 feet. These frames are always placed in a position naturally sheltered from the north-west, or else a high board fence is built to shelter them. The soil is pulverized and enriched in the best possible manner, and the lettuce is planted usually (here) about the first week in March, or nearly a month before operations can be begun in the open field. When the ordinary size or sash (3 x 6 feet) is used, about 50 lettuce plants are set under each sash, or 5 rows of 10 plants in each, as shown in figure 1. But when a double crop of lettuce and cauliflower is grown under the same sash, they are planted, as shown at figure 2, with three entire rows of lettuce, and three of the lettuce plants in the other two rows replaced by cauliflower, the cross (x) showing where the caul-



1. SASH OF LETTUCE. 2. LETTUCE & CAULIFLOWER.

flower plants are placed. Thus planted, each sash contains 44 plants of lettuce, and 6 plants of cauliflower.... Presuming that both are planted on March 1st, and protected in the usual way with sash, the lettuce will be fit for use, and cut out by about May 1st, leaving the whole space in the frame to be occupied by the six plants of cauliflower, which, at this season, protected by the glass, will

now grow so rapidly that it will be necessary to add to the frames another board in height, so as to give it head room. With proper attention to airing and watering, an excellent crop of cauliflowers is almost certain by the end of May, or about three weeks sooner than it would mature out-doors, if it matured at all; for all cultivators know how precarious a crop cauliflower is when planted in the open ground in our hot, dry June weather. In England the crop rarely fails, when planted in spring out-doors, for there they get very nearly the conditions of temperature which we give when forwarded under glass in the way above described.... The advantage of this double crop is apparent. Only six plants of lettuce are lost by the presence of the cauliflower, while three weeks longer use of the sash matures the cauliflower, which at that season readily sells in New York at from \$6 to \$9 per dozen, and by averaging the lettuce at \$5 per 100, a moderate estimate for the double crop of lettuce and cauliflower per sash, would be \$5. The variety of lettuce used is the Boston Market, and of cauliflower, the Early Erfurt. Though the new dwarf sort known as Snowball, will probably, with its compact growth and short leaves, do even better.

The Crossing of Lilies.

BY PROF. ASA GRAY.

Mr. Francis Parkman is famous as a horticulturist as well as a historian. In a new number of the "Bulletin of the Bussey Institution"—of which he was formerly Professor of Horticulture—he has now given the history of his "Hybridization of Lilies," carried on for ten or a dozen years. He began by crossing two superb Japanese Lilies, *L. speciosum* and *L. auratum*. The first year he failed; the second year brought one splendid success; for it gave us that superb lily, twelve and even fourteen inches from tip to tip of the extended petals, which, when sent to England, astonished the horticultural world, and which there received the name of Parkman's Lily (*Lilium Parkmanni*). The other results obtained in this and the succeeding operations, were of little or no practical value, but were as surprising as the Parkman Lily is magnificent.

We expect offspring to take after both parents, a hybrid to inherit somewhat equally the characters of the two species that compose it. That was the case with the Parkman Lily, which has the fragrance and form of *L. auratum*, and the brilliant color of the best races of *L. speciosum*. But this was the result in only one case out of more than fifty. Every other seed that germinated and lived to bloom, produced flowers exactly like those of the female parent, *L. speciosum*. But they were hybrids nevertheless. Mr. Parkman took all the necessary precaution to prevent access of own pollen; and the seedlings showed the blood of the male parent in their stems, though not in the blossom; for these were mottled in the manner characteristic of *L. auratum*. Though the male parent showed for so little in the first generation, there was reason to hope it might be impressed on the second. So Mr. Parkman fertilized several of these hybrids with the pollen of *L. auratum*, precisely as their female parent had been fertilized. The result was a very little seed set, but enough to produce 8 or 10 young bulbs. Of these, when they bloomed, one bore a flower combining the features of both parents. All the rest bore flowers not distinguishable from those of *L. speciosum*.

Was this inordinate habit of taking after the mother only, or mainly, a peculiarity of these two species, or was it a character of Lilies generally? To settle that question, Mr. Parkman crossed *L. umbellatum* with the pollen of *L. auratum*. The progeny was not to be distinguished from *L. auratum*, yet showed its hybridity in the imperfect condition of the stamens of many of the blossoms, and in the abortion of the pistil of some of them. Next he crossed *L. longiflorum* with the pollen of a deep red variety of *L. speciosum*. Seeds were abundantly formed; but the plants raised from them produced the flowers of the female parent, unchanged, the pure white being without tint or spot. Some of these he now crossed with *L. au-*

ratum, in some instances successfully; but in the offspring neither *L. speciosum*, their grandfather, nor *L. auratum*, their father, had produced any effect whatever on the pure white of their petals; yet the anthers had been affected, taking a chocolate tinge from the father; and as before many of the flowers were imperfect. Some of the best of these flowers were now tried in the third generation, with pollen both of *L. auratum* and *L. speciosum*; but not one would bear seed.

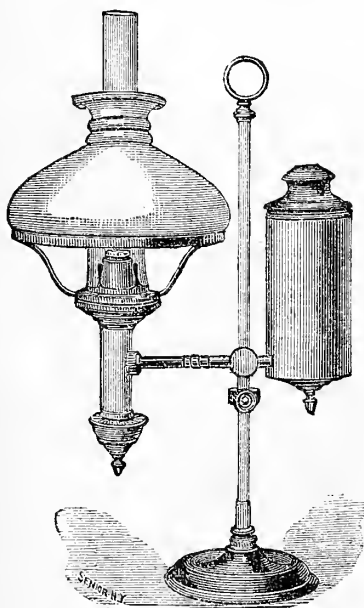
Moreover our American *Lilium superbum* was fertilized, under every precaution, with the pollen of six foreign species; seeds were abundantly produced in some instances, though in many the pods contained only chaff; several hundred bulbs were raised, but when these came to bloom, not a single flower of them all was distinguishable from that of the pure *L. superbum*. Nor in this case was there any mark of the male parent to be found in the stem, or leaves, or bulbs. All this is very curious indeed. We knew that offspring might take a great deal more after one parent than the other. But that the female sex should be so prepotent in Lilies, is a quite unexpected result. That in so many cases the influence of the male parent should be imperceptible is most wonderful.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Light in the Dwelling.

One need not be very old to recollect when kerosene, or some other product of petroleum, or coal, was first introduced. What a blessing it has been! Formerly one of the attractions of city or town life, was the ability to use gas, but now the humblest farm-house may be quite as brilliantly, and more pleasantly lighted than the most costly city dwelling. The blessing is so general, and so much a matter of course, that we hardly appreciate it, but let us put aside our lamps and use the tallow dips, or even the lard-oil lamps, or the "star," or other candles, for one evening, and we shall be very unwilling to return to them. Even the commonest kerosene lamps are a great improvement upon any mode of lighting that had gone before, and the great benefits of kerosene—which we use as a general term for the best illuminating oil—were to the farmers, and their families, rather than to those who lived in towns large enough to sustain gas works. With the brilliant light now at command, the evening is made much more valuable to the



CLEVELAND SAFETY LIBRARY LAMP.

farmer and his family. Aside from the general increase of cheerfulness which abundant light brings, reading and study can go on quite as well—in fact, better than in day time—for in the day, an active person feels that he should be out, and astir; the

evening seems the proper time for study, and our present light is a great help. When we have a good thing we like to tell others of it, and seven years ago this month, we described and figured (Feb., 1871) the "German Student Lamp." We had been temporarily residing in the city, and though the house was supplied with gas, we used this lamp with kerosene in our study, as being in every respect, including cheapness, greatly superior to gas. The article was written after two or three years' use of the lamp in the country, and having that, we did not feel any inconvenience from the absence of gas. While the "German Student Lamp" seemed nearly perfect, there were some inconveniences attending it, especially in the device for raising and lowering the wick—which sometimes would work, and at other times would not. The mechanical arrangement for this purpose was crude and imperfect, and that was the only fault in a lamp that gave a light for study use, far superior to any gas-burner we ever met with. Recently we have been using the "Cleveland Safety Library Lamp," made by the "Cleveland (Ohio) Non-Explosive Lamp Company," and we can apply all our commendations of the "German Student Lamp" to this—and a little more besides. The difficulty we found with the other lamp—the management of the wick—has been completely removed in this. The mechanical arrangement for controlling the flame is perfect in its working, and the amount of light is easily and certainly adjusted. The lamp, of which an engraving is here given, has the same general appearance of the "German Student," but the oil reservoir is much larger, and less frequent filling is required. All the metal-work is nickel-plated, thus insuring an elegant appearance, and ease of keeping it in order. The "Cleveland Non-Explosive Lamp Company," who make this lamp, apply to the font which holds the oil, as they do to all other lamps made by them, a safety guard of wire gauze, to prevent explosions in case unsafe oil is used. While it is well enough to have this, absolutely safe oil is now so easily to be procured that we can not advise the burning of any other in any lamp. If there is any lamp for burning kerosene that will give a more satisfactory light than this "Library Lamp," we should be very glad to make its acquaintance.

Home Topics.

BY FAITH ROCHESTER.

Putting Children to Bed.

Ten years ago an old friend told me that her babies had cried more over going to sleep at night, or taking their daily naps, than about all their other troubles put together. She said this after expressing surprise at the cheerful way in which my year-and-a-half-old boy went up stairs for a nap, and the quickness with which I returned to the parlor. Possibly she followed too strictly advice often given in print to mothers, something like this: "Have a regular hour for the child's nap, or for its bed time, and when that hour comes, put it in its little crib and leave it there to go to sleep without further attention." Bad advice, I think.

Being of a tender heart, my friend more likely rocked or soothed it to sleep herself, but the attempt to establish regularity may have been very trying to both mother and child. I came very near carrying this thing too far myself. Regular habits, for children of all growths, are an excellent thing in most respects, but their formation should be coaxed rather than forced, and many times "the play is not worth the candle."

I thought I must train my first baby to good and regular habits. It would be convenient for me, and wholesome for him, if he would go to bed for the night as early as six o'clock, and several times I labored with him two or three hours, in the vain endeavor to make a wide-awake baby go to sleep. A more experienced neighbor taught me better. She remarked, "Perhaps you never can teach that child to go to sleep alone in his crib. I would not try too hard."—"But," I said, "Mrs. Brown's baby goes to sleep in that way, and always has done so."—"All babies are not alike," she said smilingly,

"as I have good reason to know."—She went on to tell me some of her own experience. She supposed that babies must be rocked to sleep, unless they went to sleep while nursing, until she happened once to lay her first child, six weeks old, upon the bed, just as she had put on its night-gown, being suddenly called away to wait upon a neighbor at the door. When she came back to the baby, to her astonishment and admiration, the little thing was fast asleep. Next night she put it in bed awake, and it fell asleep without resistance, and always thereafter did the same, never disturbed unless there was loud talking in the room. This was so charming, the mother thought she would have her next little daughter behave in the same way. But no amount of coaxing or perseverance could reconcile daughter number two to being put to bed awake.

Danger in Trying Too Hard.

Night after night the poor baby screamed and sobbed itself to sleep, almost breaking the heart of its loving and conscientious mother; at the end of a week of such agony, being no more inclined to yield than at first. Then the mother concluded that she had mistaken the path of duty, and gave up the contest, fearing a lasting injury to the darling's health from such excessive excitement.

"Did she conquer you?" I asked.—"I feared so at the time," replied the mother, "but there is not a more obedient child, or a better girl in the world than my Daisy."—I believed her. But, since then, our gentle, conscientious Daisy, in her early womanhood, has suffered from long and dangerous illness, followed by a period of distressing mental weakness and aberration, which was, I have no doubt, connected in the child's vital or nervous history with that week of protracted and severe mental excitement in her baby-hood. Other similar cases have come within my knowledge. We do not know how many of the brightest and best minds have suffered great injury from the conscientious endeavors of their own loving mothers, to train them up in the way they should go. I have heard of one baby who froze its hand one winter night, though it had previously screamed long and loud, because it was an inflexible rule of its parents, not to go near it after it was once tucked up warm for the night in its crib. Mrs. Stowe tells of a baby that pulled the pillow over its face and smothered itself to death, when crying itself to sleep alone.

Going to Bed when Sleepy.

I have had little difficulty with the bed-time business. The little ones go to bed when they get sleepy, and as there is usually an early breakfast to which they like to get up, they are sleepy early in the evening. The bed feels good to a sleepy child, unless mere sleepiness has degenerated into crossness. If a child is half sick as well as sleepy, it probably wants its mother's arms. If little ones are taken arbitrarily away from their playthings or pleasures because "it is bed-time," they learn to regard bed-time as a natural enemy. As a little one's bed-time draws near, the elder members of the family should be considerate, and not propose or introduce new amusements or pleasures, which it will be hard for the little ones to leave. If anything that would have interested the little one happens after it has gone to sleep, it ought not to be mentioned afterward in a way to make the child feel that it has lost something by going to bed early.

Last night, for a wonder, my youngest boy went to bed crying, because he wanted to sit up and see papa. He is seldom awake when his father comes from his work at about seven in the evening, and until quite lately he supposed that papa was only at home a little while in the morning. He was so sleepy he could not keep awake, and finally consented, with tears, to go to bed as usual—only usually he says after a yawn, putting his hand in mine, "I guess I had better go to bed now." I had only just kissed him and wiped away his tears, when I went to the door and saw "papa" coming. I stood there until he came in, and whispered to him to kiss the little one if he was awake enough to notice him, but not to wake him more with play or talk. Behold, the child was already asleep, and then I cautioned all not to tell the baby boy that his papa came as soon as he had gone to bed lest he should

insist still more upon sitting up another time. He has his reward for early retiring, as he is the only child always *sure* of eating a six o'clock breakfast with papa. However the others may lag behind, there he sits in his high chair and bib, holding animated discourse with one who is to his imagination the personification of all the virtues and graces desirable in man.

Cheap Living for Mary and John.

They did get married, it seems; and now Mary inquires of me, how they can economize in the dietetic department to the best advantage of health and general comfort, as well as purse. This Mary has so much natural good sense, that I would not venture to advise her, did I not believe that she will take my advice, or not, just as suits her own judgment. I do not positively know, but I suspect that her John will not be very hard to suit. He has not been greatly pampered in his childhood, and will not think it hardship to live without the dainties, which needlessly consume money and time, and health, in many families. He has not taken enough meals at the best hotels and high-priced restaurants, to give him a hankering for choice porter-house steak, with an expectation that his home cook can give him equally palatable beef-steak, skillfully prepared from any serawny bit of beef, which he can find at the nearest butcher's shop. Economy is absolutely necessary for this young couple, for though John is, as he says, "chock full of day's works," having good health and energy, and industrious habits—we have come to such a pass in this fine and happy land, that many a man, who is willing and eager to work, seems forced to stand idle a part of the time. And then every one should prepare for rainy days ahead.

Meats, Costly and Cheap.

Speaking of meat—the best beefsteaks are extravagant for all but the wealthy. The seeming necessity for more or less beefsteak at breakfast, to give one strength for the duties of the day, is a result of habit. People suppose that it possesses uncommon strengthening power, because it acts so quickly upon the system. A bit of juicy beefsteak yields us nourishment already so nearly assimilated to our own flesh and blood, that we begin almost immediately to feel its help, but many—women and children especially—are over-stimulated by the meat they eat, and receive more harm than benefit from its use. This is a question for individual or family judgment; but when good meat is dear, we may be sure that it is not necessary to the health, if other good food be supplied. In selecting meat, it is by no means cheapest in the end, to "get the best," if this means that which is highest in price. The neck and brisket (breast or breast-piece next to the ribs) are low in price, but long cooking makes them tender and good. A common way now-a-days, and an excellent way, of boiling beef, so as to make it tender, and to save all the juices of the meat, is to "smother it down in the pot," or "roast it in the kettle." Pieces of the leg and shin are also cheap, and from these good soups can be made; and the soup-meat, cut into small bits, or hashed, with or without chopped potatoes, will make good breakfast dishes, warmed with a little butter, salt, and pepper. More than once, one ten-cent soup-bone has helped to make two or three meals at our house, and a fifteen-cent shin-bone has been worked into four meals for six of us—all of which I am not ashamed (as some would be) to confess. Why not brag of it?

Vegetables—Bread.

Vegetables are usually cheap, and good as food. The earliest in market are of course the dearest, but poor folks can wait a little, and enjoy their vegetables just as well, when they have become plenty, and consequently cheap. Potatoes are dear in a time of scarcity, and though I like to see them freely in the family, I do not consider them as necessary as some housekeepers do. Bread is, after all, the staff of life—the best and cheapest food in the end, provided it is good bread. It must be sweet with the natural sweetness of the grain, as well as light and tender. It must contain the bone-building and muscle-making, as well as fat-

producing elements. Good meat (especially beef), good grain (especially wheat), and good milk, each give us all the elements required for the building up and repairing the waste of the human body, yet only milk will do for sole and steady diet, and that only for infants. A "generous diet" embraces a wide variety, and this some of us wish to get with as little expense as possible. We want something to eat with our bread. "Bread and with it," my friend's brother used to say, when in dry times she used to say, "What in the world shall I get for dinner." Concerning the "with it" part, I may write further another time.

Beef Smothered Down.

Two, three, or four hours before dinner, (according to the size of your piece of meat,) put the beef into boiling water, and keep it boiling gently until it is cooked very tender. By this time the water in the kettle should have all boiled away. Season with salt, (and pepper, if you choose,) when the water is mostly boiled away, and turn the meat about in the kettle frequently toward the last. If at any time more water must be added, let it be boiling water. A piece with much bone is not suitable for this method of boiling, as too much water is required to cover it.

Soup Bones.

Any good lean meat may be used for soup, for it is the juice of the meat that is the essential principle of meat soup. But bones contain gelatine, which is chiefly useful in giving body to the soup. Bones, also, contain actual nourishment, according to Dr. Smith, author of "Foods." Those best adapted to soup, are pieces of the leg and shin. They should be well washed, and subjected to a long, steady boiling. So far as the meat is concerned, it need not be boiled longer than until it is cooked tender, which may be in three hours; but the bones do not yield their best contribution to the soup without longer boiling—from six to eight hours, or all day if you like. As poor folks can not afford to give the soup-meat to the dogs and chickens, it is well enough to remove the meat from the kettle when it is done tender, without allowing it to yield all of its goodness to the soup. If you have all of the juice of the meat in the broth and the meat, you can use both as you see fit, without any waste. But if excellent soup is the main object, boil the meat with the bones until all are "in rags," and you can still use the meat. Of course soup-meat must be put into cold water, heated slowly, and boiled very gently, but steadily. I did not mean to tell now all about soup making.

A Neat and Useful Wood-Box.

BY JOS. L. TOWNSEND, PAYSON, U. T.

Wherever wood is burned, as it still is, at least in the kitchen, in many localities, a box of some kind,

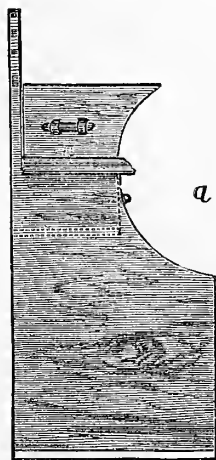


Fig. 1.—END VIEW.

to hold the day's supply of fuel, is necessary. Of course a common rough box will answer the purpose, so far as to hold the wood, but if the box, while none the less useful, can be made ornamental also, two ends are gained. Mr. J. L. Townsend, of Utah, sends us very neat drawings of a wood-box of his contrivance, with the following description. "Materials required in construction are: about 30 ft. 1-inch white pine, 6 14-inch No. 8 screws, 1 lb. 6-penny nails, a few brads, and 1 lb. glue. Figure 1 shows an end view with center, from which the circle is drawn at a. Fig. 2 is a front view, from which the ornamental back can easily be reproduced, figures 1 and 2 both being one-sixteenth of the actual size. Figure 3 is a perspective view not

drawn to scale. Size of box, outside measure, 26 in. long, 17 in. wide, 15 in. high in front, and 23 in. high behind to underside of shelf, b. Shelf is 28 in.

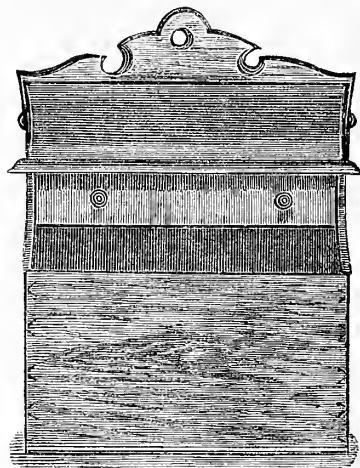


Fig. 2.—FRONT VIEW OF WOOD-BOX.

long, and 9 in. wide, moulded on ends and front edge, projecting 1 inch. Ornamental back is cut from a piece 27 1/2 in. long, and 13 1/2 in. wide. At c, figure 3, is shown a drawer, 4 in. deep on face,

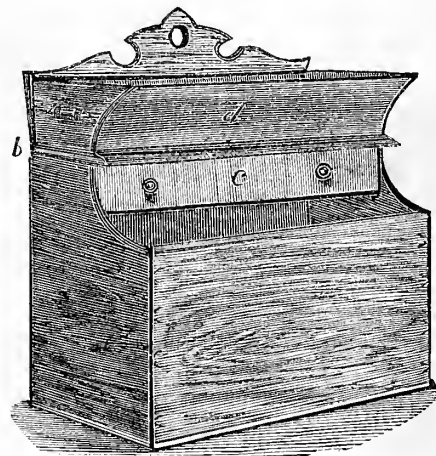


Fig. 3.—PERSPECTIVE VIEW OF WOOD-BOX.

sliding under the shelf, b, on cleats fastened to the ends of box, inside. At d is a movable till or box, which rests in place on shelf b, and is secured from slipping off by pins fastened in the shelf, which enter corresponding holes in the ends of the till. Handles to drawer and till are turned from black-walnut, and fastened securely by screws from inside. The box is securely dove-tailed together, front and back, as high as shelf b. The ornamental back-piece is then fastened by dowels and glue in place. The shelf is then nailed on, nailing through the back into the edge of the shelf. The bottom of the box is then nailed on, and the drawer, constructed of the usual pattern, is fitted to its place, so as to slide in and out easily. The till is constructed the same as the drawer, except the front, which is made from 1/4-inch clear, straight-grained pine, steamed, and nailed with 1/4-inch brads, while hot, into its place. I designed and made one which we have now used for three years. It holds enough wood, filled morning and evening, to supply our "Charter Oak" cook stove. The movable till is very convenient to use in gathering chips, or as a receptacle for kindlings. It being as light and portable as a chip-basket, and never in the way. The drawer is used to hold a stove-brush, shovel, blacking, stove-hook, kindling-hatchet, kindling-saw, hearth-broom, etc., being a place for the stove utensils that are usually scattered under foot and out of place. Our wood box is very neatly painted and grained in oak, and combines more usefulness and ornament than any like piece of kitchen furniture in the market. The drawer is not in the way of putting in or taking out fuel, and the boys or men who keep the box supplied, should be taught to place the wood in quietly and regularly, and not to throw it into the box in a careless manner.

BOYS & GIRLS' COLUMNS.

Our Young Microscopists' Club.

SUNDRY THINGS TO DO NOW.

Well, here is more work for "The Doctor"—not that I regard it as "work" exactly, perhaps I might say more fun for "The Doctor." Those of you, and I know that it is several thousands already, who have the *American Agriculturist* Microscope, and have read the Working Description with it, must have noticed that the Publishers have said that "The Doctor" will tell you more about it in various ways. I am very glad to do this, because I am sure that some of you will meet with the same difficulties that I found when I first had a microscope, and I shall be very glad to help you over the hard places. So

OUR YOUNG MICROSCOPISTS' CLUB

consists of all of you who have, or can have the use of, the Microscope sent out by the Publishers. Let me tell you at the start, that this Microscope will not do all, or show all that you have read about as being shown by "the microscope." A "house" may be a log cabin with one room, or it may be a great mansion with 20 rooms, and in each case be a complete house. So this Microscope is very good for one of its kind, costing only a fraction of a dollar, while the one I most use cost \$16, and the one that I use now and then, cost \$50, and if one wishes, he can expend thousands on a microscope. So you see that when one speaks of a "microscope," it is a very indefinite term. The most generally useful microscopes, are not the very costly ones, and the way to begin to use a microscope at all, is to start with a simple and not costly one, and then when you can afford it, get a more powerful one. But my experience—and it has been a long one—has been, that however powerful a microscope one may have—and I have used some of the best that have been made—the little simple microscope, like the *American Agriculturist* Microscope, can not be put aside, as it has uses which the powerful ones can not serve. I am sure that you can learn much from this little instrument, and that it will afford you much interesting amusement for the whole year. Read what is said in the 14 column Description with each Microscope, and at once

MOUNT IT ON A BASE.

The directions there are very plain, and it will take but a few minutes to follow them. You will find that it will make the instrument much more useful and manageable. Then the next most useful thing to do, is to mount some needles as there directed, and to get up some kind of forceps, or tweezers, as there described. Having these and the Microscope mounted as there directed, you will be ready to examine anything that may come along. But one word about

OUR CLUB.

A club has two ends. I am willing to be one end—the handle or the "hitting end," just as you choose—but you youngsters, boys or girls, must be the other end, if you expect the "club" to prosper, you must take a part. Now, you, all of you, boys or girls, or if you like it better, young men and women, must help. How? By writing me what you find, the difficulties you meet with, in short, all about it. Many, no doubt, having read what the most costly microscopes will do, will try to see the same with this—they can't do it any more than they can hit a 1,000-yard target with a pistol. Others will want to know how to prepare things so that they can examine them; and others, still, having found interesting objects, will wish to know how to preserve them, so that they may show them to others, and keep them to look at again and again. So I say to all such, write and tell me all about it. How can I keep up a club all by myself? I shall expect help from all of you—and in turn I will try to help you—Isn't that fair?

WHAT TO LOOK AT.

As soon as spring opens you will find a great abundance of things that you will wish to examine, but just now cold weather puts a stop to animal and vegetable life. The Descriptive Sheet with each Microscope gives a number of things which you may examine with interest—such as flies, spiders, ants, taking separately their wings, legs, proboscis, etc.; fleas and lice on animals, small insects, including the minute lice on plants in the house, dust from the floor and elsewhere; soils, dried and fresh leaves, seeds, feathers, small fish scales, or bits of them, etc. I will give you a few more. One of the great uses of the Microscope will be in helping young people to study plants. Let me give you a starting point in this. Get a piece of one year's growth from any fast-growing tree, say a maple or a willow—any tree that makes strong shoots every year. A piece a few inches long will answer. Then go to the stack of corn-fodder, and get a small stem—no bigger than a lead-pencil is better than larger. Get the smallest stem you can find. Put both of these, the corn stalk and the twig, into warm water, and let them soak for some hours. Now I wish you to

look at a cross section of these, that is, a slice cut across them, to see their structure, that is, how they are made up. To make sections of this kind, there are nice little instruments, which you can get for \$5 or more—but we must do without such expensive things. Having your corn stalk well soaked, and something to cut with—a razor is best, but a very sharp, thin knife may do. Put the corn stalk on a piece of board, put the nail of your fore-finger as a guide, then cut straight down with the razor. This piece will probably be thick; move your nail back the least distance possible, and cut again; this time you may get a very thin slice, but by care, using the nail as a guide, you can soon get a slice as thin as the thinnest paper. It is well to keep the end of the corn-stalk wet, and when you get a nice thin slice, by means of a needle, put it on one of the glass slides of the Microscope. Then try the willow or maple. These are harder than the corn-stalk, and will require more care to get a very thin slice, still, with patience you can do it. Having a thin one, put it by the side of the corn-stalk slice, put the other slide over, and examine

BOTH THE TREE AND THE CORN STALK.

These must be looked at as transparent objects. Having both sections—as these are called—between the two glass slides, push the slides under the clips or springs of

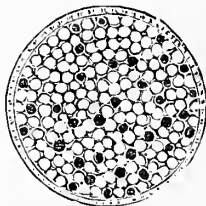


Fig. 1.

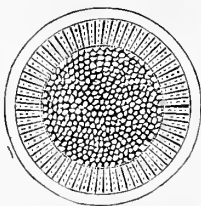


Fig. 2.

the Microscope, placing them so that the section of the corn stalk will be in the field of view—that is, directly under the lenses. Having adjusted the focus properly, so that you can see distinctly, the section of corn stalk will appear as in figure 1. Having looked at this carefully, move the slides so that the section of the tree twig is brought into view. Notice that this is quite different, and that it appears as in figure 2. Turn back again to the section of corn stalk, and section of tree, and get them well fixed in your mind. You see how different they are? What is the difference? In the corn stalk you have pith, with dots all through it. In the willow or maple, you have pith in the center, a ring of harder substance, and then a ring of bark. Here in these you have a ring of pith, a ring of woody matter, and a ring of bark. In the corn stalk you have pith, scattered through it dots that look like the woody matter of the tree, and no distinct bark. Now I wish you to look at these carefully, and to recollect distinctly how they look. When you have them well fixed in your mind, slip the sections off from the glasses upon a bit of stiff writing paper, and fold them up carefully, until I can tell you how to preserve them. You have now stems of the

TWO GREAT FORMS OF VEGETATION. The corn stalk stem, in which woody fibre was distributed all through the pith without regular order, and the willow or maple stem, in which the woody fibre was in a ring all around the pith, with a bark outside. Remember this—for it is almost the very beginning of the study of plants. You can try other stems also, and learn to make thin sections. But you will want to be on the lookout for

AMUSING THINGS FOR THE MICROSCOPE, and as we extend over so many degrees and climates, I must keep ahead of the season. In wet places we find, even around New York, very early in the spring, sometimes in March, and those who live in the Southern States, may find it even earlier—the curious Field Horse-tail. With me, it grows in wet sandy places by the roadside, and is one of the first signs of vegetation in spring. In most of the Northern and Middle States, you may look for it in March, if not earlier, and when you find it it will be like figure 3, and of about that size, looking very little like a plant, as it is of a light-brown color, with, at each joint of the stem, a sheath of a darker color.



Fig. 3.

At the top of the stem is an oval head, as seen in the engraving. Later in the season this plant produces green stems—but we do not care about these at present—though we may say that from the pine-like appearance of these stems, the plant is called

GROUND PINE, AND FIELD HORSE-TAIL.

But the stems shown in the engraving are those which appear first, and are the most interesting, though from their strange shape and color they do not look much like plants. I think they must be very common—for I always see them in wet places, as I drive home from the depot, in early spring. If you find these, gather a lot, put them in a bottle, or tumbler, and let them dry. Then, if you wish to see something funny, shake from the heads of these plants some of the dust, which they will give out abundantly, upon one glass slide of your Microscope. It will appear like a ball, with four arms, as in figure 4. While you are looking at it, ask some one to breathe upon it, and you will see a very lively motion; the arms, as if ashamed of themselves, will at once coil around the central portion, and appear as in figure 5. If you wait until the moisture of the breath passes off, the arms will gradually spread out again. What does all this mean? you will ask. The little ball, with the four arms, is to this plant what seeds are to most other plants. This little ball can grow and make a new plant. You can see how the arms, so easily affected by moisture, can, by alternate drying and moistening, move the little seed-like ball to quite a distance. Usually I find a great quantity of this plant close at home, and if I find it abundant this spring, will lay in a lot for those who may want it. And this reminds me that out of our Microscopists' Club—there will somehow grow up



Fig. 4.



Fig. 5.

AN EXCHANGE CLUB.

Those who find interesting things, will wish to send them to others who have things which they want. Well, we shall see what will grow out of it. You may be sure of all possible help from

THE DOCTOR.

Aunt Sue's Chats.

Mrs. T. DAVIS EVANS has been kind enough to send us a description of a home-made frame and corner-bracket. She begins her letter (dated Nov. 24th) with the remark: "As it is about time for Christmas presents, I will try to give you a few hints," etc. It is evident that

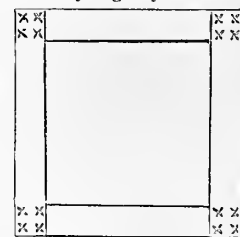


Fig. 1.

she did not know (or has forgotten) that six weeks must elapse before my correspondents can receive any acknowledgement through the *American Agriculturist* of their communications. Consequently the Christmas presents for 1877 will be things of the past when this article appears; but things like this are not of necessity

confined to Christmas presents, so her directions are given here, that those who wish may avail themselves of them now, and those who wish to make such presents for next Christmas, will find them on record. I may add that the material is called "corn husks" in the East, and "corn shucks" in the West and South. Each ear of corn is closely surrounded by leafy bodies, which overlap one another, the outer ones being harsh and thick, and often weather-stained, while the inner ones are soft and thin, and of a pleasing color. Mrs. E. says: "First I will describe a shuck picture-frame. Supposing the picture to be 8 by 10 inches, the materials needed are, some nice, white, pliable, inside corn shucks; two pieces of pasteboard (which may be cut from an old box), 12½ inches long by 1½ inch wide, and two pieces 10½ inches long by 1½ inch wide; a coarse needle and strong thread. First sew the pieces of pasteboard squarely at the corners (as in fig. 1).

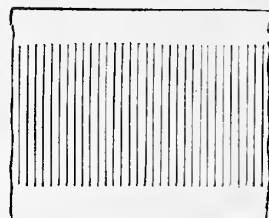


Fig. 2.

Second, cut a great many shucks about three inches long" (Mrs. E. does not say how wide, but I fancy they might be square.—A. S.), "and shred them as finely as possible (see fig. 2) with a large pin or needle (after a little practice you will find it very easy), leaving at each edge a margin of half an inch unshredded (as in fig. 2). When you have enough to begin with, fold them with the solid edges together (as in fig. 3)—crumpling the

solid part up in the fingers to give them a little fullness, and sew them all along the inner and outer edges of the frame (as in fig. 4), letting them project beyond the paste-board at least half an inch. For the next row cut pieces of the shuck about half an inch wide" (and two inches long?—A. S.), "and fold them into points (as in fig. 5), sewing them on so as to cover the stitches of the first row. (See fig. 6.) For the middle you can either put pieces like the outside rows, only running in the opposite direction (across, see fig. 6), or you can use the points, sewing them on diagonally. As you come to each corner, make a rosette of the shredded shucks, with a piece of solid shuck cut round and



Fig. 3.

gathered to look like a button in the center, as a finish to the rosette. Remember that neither the shredded pieces on the edges nor the points are to be mashed flat.

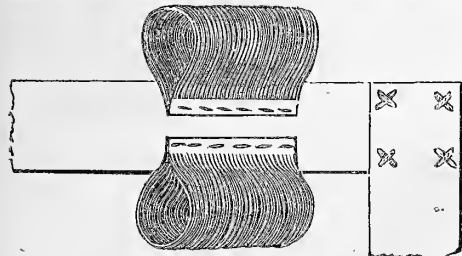


Fig. 4.—THE SHREDDED PIECES.

"Now for the corner bracket. You need three pieces of thin board, cut in quarters of circles (see fig. 7), each piece a little larger than the last. Say the first is 8 inches from A to C, let the next be 9 inches, and the third piece 10 inches. Bore a hole in each corner for the cord to go through. Cut three pieces of eardboard like figure 8, just long enough to cover the curved side (from B to C) of the board. Cover it with shuck points. Cover the boards smoothly with nice paper. Tack the covered pasteboard (fig. 8) around the curved side of the board;

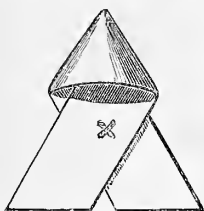


Fig. 5.—POINTS.

three tacks will be enough, one at each end and one in the middle. Then string the boards on the cord, one at a time, putting a knot in the cord with a little peg through it at the top and bottom of each hole (fig. 9), to keep it from tilting up at one corner and spilling all of the pretty things off. With a little ingenuity, a few collar-boxes, some nice shucks, and bits of silk and worsted, a great many pretty things can be made, such as match-boxes, hair-pin boxes, work-boxes, pin-cushions, jewelry boxes, wall-pockets, watch-cases, etc."... We are much obliged to Mrs. Evans for her instructions in making pretty

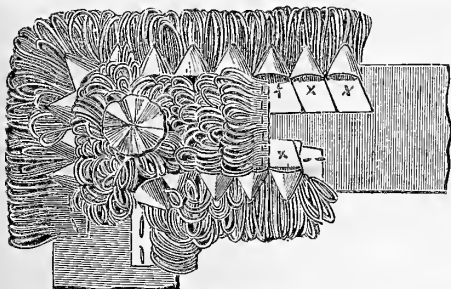


Fig. 6.—CORNER OF FRAME COMPLETE.

articles from common materials, and shall be very glad of any other hints she may give us in the fancy-work line.

LEONIE B.—I know nothing about the process of dyeing straw-hats.... I asked a cracker-baker "how to make crackers"; he looked compassionately at me and said it was impossible to make them without machinery. "Why?" I asked.—"Because the dough has to be so stiff that it cannot be manipulated with the hand."—"What are the ingredients used? Flour, water, and salt?"—"Yes, flour, water, and salt; but they cannot be made by hand."—"I suppose we could bang the dough with a cobble-stone rammer! couldn't we?"—"Oh!

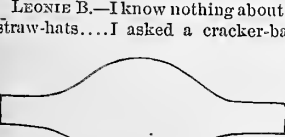


Fig. 8.

yes, certainly."—And that was the best I could do for you, Leonie. So suppose you make a very stiff dough of the ingredients mentioned, "manipulate" it with the potato-masher until you have "banged" it quite thin on your paste-board; then cut it into circles about as big as a small saucer; make indentations with a skewer all over them, and bake them; then let me know how they turn out.

MARY E. STAM.—I know nothing about "allspice baskets," but suppose you string the spice upon wire, and weave them into whatever basket shape you choose. "Ethel" signifies "noble," and Ella (the diminutive for Eleanor) "all fruitful."

PHREE-ANN.—You can make a very nice "bandoline" thus: Put a teaspoonful of Gum-Tragacanth into a tumblerful of water to soak; let it stand twenty-four hours, stirring it frequently, and see that it is all completely softened. Gum-Tragacanth is very unlike Gum-Arabic; that dissolves in water, while Tragacanth does not, but it takes up a great deal of water, swells enormously, and forms a thick mucilage. Add water to it, stirring thoroughly, until it is about like thick cream; then thin it with Cologne or lavender-water (the spirit of which will preserve it), until of the consistence for bandoline. [Perhaps every one may not know that Bandoline is the name of a French hair dressing, to stiffen the hair and make it stay in place. It is also made from quince seeds.—ED.]

J. T. F.—Yes, Fall River, Mass., has extensive factories, consuming nearly 140,000 bales of cotton annually, to make about 340,000,000 yards of goods, mostly prints.

Aunt Sue's Puzzle-Box.

As you will all be drawing around the table these cold evenings, I propose to give you another prize puzzle to try your wits and patience over, and to make you better acquainted with the dictionaries. The puzzle is constructed upon the same principle as that given in the April number of the *American Agriculturist*, 1877 (page 147); that is—I have given to each item of the enigma one of the synonyms or definitions given to it in the dictionary. Of course I have selected those that you would be least likely to think of. Which among you thought that—in the last prize enigma—"My 48, 11, 1, 45, 51, 34—chief," meant "staple?" The fact is, we use many words now-a-days, and never stop to consider their meanings. I propose to "stop" you for a minute or two over the accompanying prize enigma. I offer twelve prizes for the first twelve correct answers to it, subject to the conditions undermentioned, which are:—

1st. All answers must reach me on or before the last day of April (1878). 2nd. Answers must be signed with the name and post-office address of the sender, and be enclosed in a sealed envelope superscribed—"Answer to Prize Enigma." This must be put in another envelope, and addressed and mailed to "Aunt Sue, Box 111, P. O., Brooklyn, N. Y." On the first day of May, I will place all the answers received, in a box, and shake them up well. Then—as before—I shall invoke the aid of the little Clara Josephine, who, being then thirty months old, will not be accused of partiality; she shall preside over the box, and shall hand me the answers one at a time. I will open and examine each answer in the order of her selection, and to the first twelve correct answers will accord the prizes, one of which will be mailed, as before, to each winning address. The result will be publicly announced in the July number.

Each prize will consist of a pen and (nickel-plated) holder; the pen shutting into the holder when not in use, and filled with the coloring matter necessary to make ink by simply dipping the pen into water. All the members of one family may work out the solution together, but of course only one member of a family will send an answer. Now get out your dictionary and go to work.

THE PRIZE ENIGMA.

I am composed of 48 letters:

My 44, 9, 32, 2, 5, 18, 40, 48, is to throw out.

My 36, 10, 28, 24, 19, 6, is unbiased.

My 4, 26, 39, 43, 21, is inflated.

My 47, 30, 27, 12, 23, is vital.

My 29, 31, 42, 16, 34, is a charming person.

My 13, 38, 47, 46, 35, 19, is communicative.

My 33, 41, 3, 11, is a countryman,—a rustic.

My 1, 45, 20, 8, 15, is oscillation.

My 25, 22, 7, is a race, a family.

My 14, 17, 37, 5, is to rob.

My whole is a word meaning "shriveled," and part of its definition and application.

ACROSTIC.

1. A city of Holland. 2. A city of New York. 3. A city of Connecticut. 4. A county of Maryland. 5. A town of New York. 6. One of the U. S. capitals. 7. A city of New Jersey. 8. A town of Pennsylvania. 9. A town of Maryland. 10. A city of New York. 11. A town of Iowa. 12. A town of North Carolina. The initials form a good old song.

LITTLE ONE.

DIAMOND PUZZLE.

1. A vowel. 2. To weary. 3. To ensnare. 4. A city. 5. A profession. 6. Joy. 7. To direct. 8. A unit. 9. A consonant. The central letters, read downwards and across, form a profession. NIP.

ANIMALS ENIGMATICALLY EXPRESSED.

1. An engine of war. 2. Tardiness. 3. A small bag. 4. A weight. 5. A city officer. 6. Unfurnished.

FIGURE BLANKS.

Fill the following blanks with some number that will, either in spelling or sound, make sense of the sentence; as—for instance—"1000" in "go ——— ders and call Jim," or—"Go thou Sanders and call Jim.

1. It was my ino ——— ing my ——— der limbs.
2. I ——— eaten any, I am ——— tun ——— in not feeling ill.
3. I never ——— anything at ——— up.
4. It would be well ——— ros ——— use cam ——— and qui ———.
5. I ——— der how you ——— so many.
6. ——— vel was a gr ——— city.
7. By ——— de in adversity men of ——— become ——— n ———.
8. I recommend phy ——— as a gr ——— and thorough study ——— using the mind. JACK SPRATT.

CROSS-WORD.

My first is in scramble but not in push,
My next is in heather but not in bush,
My third is in satchel but not in bag,
My fourth is in horse but not in nag,
My fifth is in house but not in barn,
My sixth is in worsted but not in yarn,
My seventh is in shilling but not in penny,
My eighth is in few but not in many,
My ninth is in true but not in good,
My tenth is in fuel but not in wood.
If from these letters the right you take,
Some very good advice they'll make.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

NUMERICAL ENIGMAS.—1. Beware of reading without thinking of the subject. Up to December 18th, this enigma has been correctly answered by Willie P. Bricker, G. M. Taylor, Cyrene Griffiths, H. M. Innis, Ellsworth W., Mazie Lane, Charles A. Scaver, Bethsinda, C. C. Averill, E. G. Spencer, Mrs. M. H. Dildine, L. M. Hull, W. C. Moore, J. H. Bird, and E. B. Brown.—2. The early bird gets the worm.

CROSS-WORD.—Household.

HALF-WORD SQUARE.
M A R T I N
A F O O T
R O S Y
T O Y
I T
N

DIAMOND PUZZLE.

C
P O T
M A R T S
C O R S I C A
S P I N E
I C Y
A

Pt.—Too late I stayed, forgave the crime,
Unheeded flew the hours,
For noiseless falls the foot of time
That only treads on flowers.

ANAGRAMS.—1. Alternate. 2. Aerimony. 3. Presidential. 4. Lemonade. 5. Purchase. 6. Diameter. 7. Remainder. 8. Negotiate. 9. Remittances. 10. Geometrical.

BLANKS.—1. All, hall. 2. Row, grow. 3. Alter, halter. 4. Lass, glass. 5. Lad, glad. 6. Rove, grove. 7. Lime, elime. 8. Low, flow.

PUZZLE.—(This was—by some mishap—left incomplete by the printer.)

CONCEALED BIRDS.—1. Lark. 2. Wren. 3. Quail. 4. Dove. 5. Grouse. 6. Hen. 7. Swallow. 8. Heron. 9. Teal. 10. Owl.

Thanks for letters, puzzles, etc., to W. Simpers, Minnie Bennett, S. W. A. (M. D.), Isola, Mrs. P. B., Wilbur B. K., Jerry S. S., L. M. H., and Ellsworth W.



Send communications intended for Aunt Sue, to Box 111, P. O., Brooklyn, N. Y., and not to 245 Broadway.

Chimneys and Chimney Sweepers.

We wonder how many youngsters would know the little fellow in the picture if he were not labeled the "Little Chimney Sweeper," and now that they know what he is, can tell much about him? In cities and large towns, when wood was burned altogether, soot, from the wood fires, would collect in the chimneys, and if this were not removed from time to time, it would catch on fire and burn furiously, and if this happened in a dry time, there was danger that the house, or other houses, might be burned. Those who make a trade of clearing out chimneys, are called "chimney sweepers," "chimney sweeps," and more frequently merely "sweeps." A "sweep" is now quite rare in New York, though once in a while we have seen one in the back streets, and looking as if he had not had a job in a very long time. Still, one need not be very old to recollect when the sweep's cry was one of the common street noises. They usually went in pairs, a man and a boy, and as they dressed in keeping with their trade, you may



THE LITTLE CHIMNEY SWEEPER. — Engraved for the American Agriculturist.

be sure that they were not very handsome to look at. They were generally colored people, but if white persons followed the business, they were so blackened with soot, that it was not easy to tell them from the black sweeps. Early in the morning the streets would ring with their cries. The fellows had strong voices, and they would sing rather than shout, "Sweep O. Sweep O. From the bottom to the top, sweep O-o-o-o." But when the people in the cities gave up burning wood, and used coal instead, the trade of the sweeps was spoiled, and their song is now rarely heard—though it is now and then, as there are still a few old-fashioned people who prefer to burn wood—enough in a large city like New York, to give employment to here and there a sweep. The use of coal in place of wood for cooking and warming houses, was a great improvement—and a great blessing too, for if all burned wood now, as they did 50 years ago, it is difficult to see where enough wood could have been found, and it would now be a very costly article. The houses of our grand-parents were, at best, but poorly heated by wood fires, and coal not only brought an increase of comfort, but much labor of sawing, splitting, and bringing in wood and keeping the fire in good order was saved. But the coming in of coal brought a greater blessing than either or all of these—at least to a few—it broke up the trade of the sweeps. You may think it was a blessing to stop them because they were so dirty and noisy, but that is not it. The trade was a bad one, sometimes a wicked one, in the abuse of little

boys. Some machines were invented, which allowed the sweeping of chimneys to be done by men only, but most of the sweeps stuck to the old plan, and had a hoy to climb up on the inside of the chimney, and scrape away the soot from its sides. How many of you boys from six to twelve years old would like such a life as that? Just think how dismal it must have been for these poor little fellows to climb up, at the risk of their lives, the long, black, dark chimney, with the soot filling the air and making it difficult to breathe! But before we say any more about our little friend, the sweep, let us say something about chimneys. You must know that people had fires in their homes long before they had chimneys. How very uncomfortable it must have been to have a fire in the middle of the room, and a hole in the ceiling above for the smoke to go out of, and the rain to come in at. Yet this was the way in which those who, 500 years ago, lived in the grand old castles, managed their fires. We read about the great wealth and splendor of the old barons, with hundreds of followers, but they did not live half so comfortably as the day laborer does now-a-days. The first chimneys were not made like ours: the stone walls of the big houses and castles were very thick, and a fire-place was made in the wall, with a passage in the wall for the smoke, which found its way to the open air through a hole in the side of the building. After a while chimneys, much such as we have now, were built. Where wood is burned, some of the matters that are formed in the burning condense on the sides of the chimney, that

is, they cool and harden there, and this forms what is called *soot*, which in time, would gather in such quantities as to check, if it did not stop the draft. Besides this, as already stated, the soot will burn, and a "chimney on fire," as it is called, is a dangerous affair in a dry time. There were two ways of getting rid of the soot, one was to burn it out; taking a wet day, when there was no danger of setting the roofs on fire. A lot of straw or shavings were put into the chimney and set on fire, and the soot burned out. Another way was to have the chimney swept. Chimneys at first were built very large, but as room became valuable, they were made smaller, and mostly the flues were so small that only a hoy could work his way through them. For many years, in England, the homeless pauper boys were apprenticed to chimney sweeps, and it would be a sad story if the sufferings of these poor little creatures could be told. Living in dirt, and breathing soot, they were subject to peculiar diseases, and one known as the "chimney sweep's cancer," was very fatal. But let us be glad that the law has put a stop to this abuse, and that in England, at least, this wretched use of boys is no longer allowed. Hard, or anthracite, coal is used in all the towns and cities on the Atlantic coast; this makes no soot, but where the soft or bituminous coal is used, as it is west of the Alleghenies and in Europe, the chimneys get foul and must be swept. There is, however, no more need of employing boys to scrape the chimneys, as there are now contrivances by which the sweeping may be done without them.

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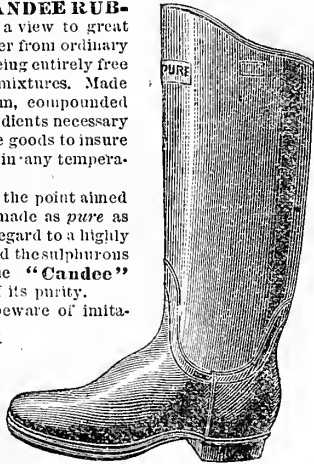
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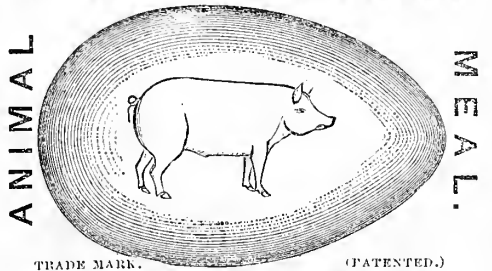
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Is what we can supply the readers of this paper, if desired, at a price as low as any jeweler pays for them at wholesale. We will mail on receipt of price, one set of six **SOLID Silver Tea Spoons** for \$3.50, (cost at retail from \$6 to \$7), or, for 85 cents, which covers the cost of the spoons, as well as postage and packing, we will send by mail or express, prepaid,

ONE SET OF 6 QUADRUPLE TEA SPOONS IN CASE, finely and heavily plated with **PURE NICKEL**, and **COIN SILVER**, on a new metal, called **Alfenide**, which is very similar to the finest English white steel. It contains no brass or German silver in its composition, and consequently no poison, or disagreeable taste. Are very strong and will wear for years. Two sets, \$1.50.

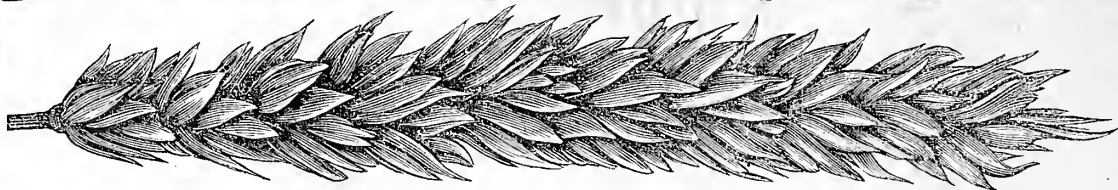
We shall not furnish these goods to the trade, consequently they cannot be supplied by any other manufacturer or dealer.

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IN PREMIUMS



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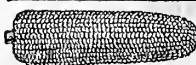


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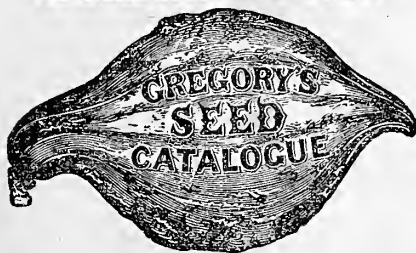
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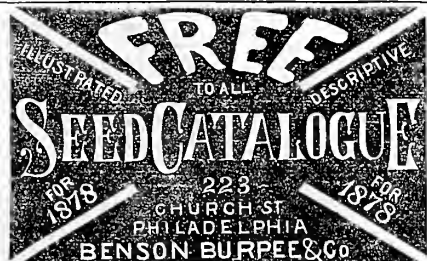
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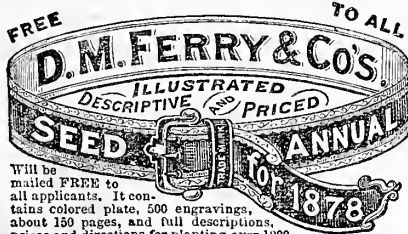
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The full Descriptions and Illustrations of the Premiums, with various Notes and Explanations, were published in 8 extra pages of our October number, which can not be repeated for want of space. Any one not having that number, can have one mailed, post-paid, for 10 cents; or a Premium Sheet only, will be mailed to any address without charge.

PREMIUM

Explanatory Notes.

N. B.

Read and carefully Note the following Items: The Table herewith tells the name and cash price of each article, and (in last column but one), gives the number of names sent in at the regular price of \$1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is \$1.10 each, but only a part of the premiums come under this head. Some persons quickly raise large clubs by taking all the names at \$1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.)... (a) All subscribers sent by one person count, though from several different Post-offices. But... (b) Tell us with each name or list of names sent, that it is for a premium.... (c) Send the names as fast as obtained, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next July, to complete any list, but every premium desired will be sent as soon as earned and ordered.... (d) Send the exact money with each list of names, so that there may be no confusion of money accounts.... (e) Old and new subscribers all count in premium clubs, but a portion at least should be new names; it is partly to get these that we offer premiums to canvassers.... (f) One or two Specimen Numbers, etc., will be supplied free, as needed by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they are expensive, and should be used carefully and economically, and where they will tell. Other specimen numbers will be sent, post-paid, to canvassers only, for 10 cents each. The price to others is 15 cents.... (g) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at our risk; otherwise it is not.

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Table of Premiums

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[In the following table is given the price of each article, and the number of subscribers required to get it free, at the regular rates of \$1.60 a year, and also (with a part of the premiums), at the club rates of \$1.10 a year, postage included, which is prepaid in all cases by the Publishers.]

TABLE of Premiums and Terms

For Volume 37—(1878).

Open to All—No Competition.

No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at or above \$1.60 1.10
1	Tea Set (Middletown Plate Co.)	\$50 00	66
2	Ice Pitcher (do. do. do.)	\$13 00	20
3	Cake Basket (do. do. do.)	\$7 50	16
4	Cake Basket (do. do. do.)	\$10 00	18
5	Casters (do. do. do.)	\$5 25	13
6	Casters (do. do. do.)	\$7 50	16
7	Casters (do. do. do.)	\$10 50	19
8	Butter Cooler (do. do. do.)	\$6 50	15
9	Pickle Jar and Fork (do.)	\$5 00	12
10	Syrup Cup with plate (do.)	\$6 25	15
11	Child's Cup (do.)	\$3 50	8
12	Twelve Teaspoons (Meriden Cutlery Co.)	\$7 25	16
13	One Dozen Tablespoons (do. do.)	\$14 50	22
14	One Dozen Table Forks (do. do.)	\$14 50	22
15	Ladies' Folding Pocket Scissors (do.)	\$1 50	4
16	Child's Knife, Fork & Spoon (do.)	\$3 00	8
17	French Cook's Knife, Fork, & Steel (do.)	\$3 75	9
18	Set of Scissors (C. S. Steel Shear Co.)	\$4 00	10
19	Portable Writing Desk (C. W. F. Dore)	\$7 50	14
20	Walnut Work Box (do.)	\$1 25	4
21	Buck-Saw for Boys (do.)	\$1 50	4
22	Little Girl's Wash Set (do.)	\$1 00	3
23	Sled (do.)	\$2 00	5
24	Spring Horse (do.)	\$11 00	18
25	Boy's Wagon (C. W. F. Dore)	\$5 00	12
26	Boy's Tool Chest (E. J. Horvath)	\$1 00	3
27	Boy's Larger Tool Chest (do.)	\$2 50	7
28	Boy's Larger Tool Chest (do.)	\$5 00	12
29	Pat. Magic Belthead Pencil (Ludden & Taylor)	\$1 50	4
30	Ladies' Magic Charm Pencil (do. do.)	\$2 00	5
31	Gents' Magic Charm Pencil (do. do.)	\$2 75	7
32	Gold Pen, Telescope Case (do. do.)	\$2 50	7
33	Gold Pen and Pencil, Elegant (do. do.)	\$5 50	13
34	Knives and Forks (Patterson Bros.)	\$14 75	22
35	Knives and Forks (do. do.)	\$18 50	28
36	Carver and Fork (do. do.)	\$3 75	9
37	Pocket Knife (Meriden Cutlery Co.)	\$1 50	4
38	Pocket Knife (do. do.)	\$2 00	5
39	Pocket Knife (do. do.)	\$2 75	7
40	Ladies' Pocket Knife (do. do.)	\$2 00	5
41	Multum in Parvo Knife (do. do.)	\$3 50	8
42	Crandall's "John Gilpin" (do.)	\$1 00	3
43	Crandall's "District School" (do.)	\$1 00	3
44	Crandall's "Masquerade Blocks" (do.)	\$1 00	3
45	Crandall's "Acrobats" (do.)	\$1 00	3
46	Crandall's Building Blocks (do.)	\$1 50	4
47	Crandall's "McNaghtie" (do.)	\$2 00	5
48	Pair of Skates (Patterson Bros.)	\$3 50	8
49	Boudoir Clock (S. B. Jerome & Co.)	\$3 50	8
50	Wire Bed Mattress (H. Buckingham)	\$12 00	19
51	Houck's Patent Pocket Cook Stove	\$1 35	4
52	Houck's Press (W. A. Doanman)	\$2 00	5
53	Aquapult (Force Pump) (W. & B. Douglas, Middletown, Conn.)	\$9 00	17
54	Self-adjusting Gold-plate Watch Key, (J. S. Birch)	\$1 00	3
55	Pocket Tool Holder (Miller's Falls Co.)	\$1 00	3
56	Piano, Splendid 7-Oct. (Steinway & Son)	\$650 00	625
57	W. S. Hunt's "Universal Force Pump"	\$12 00	19
58	Water Watch (American Watch Co.)	\$50 00	44
59	Bracket Saw (Miller's Falls Man'g Co.)	\$1 25	4
60	Payson's Indelible Ink—Pen, etc.	75	3
61	Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)	\$2 75	7
62	Abbott Pocket Microscope (L. G. Abbott)	\$1 50	4
63	Cahoon's Broadcast Seed-sower	\$5 00	12
64	Moore's Floral Set (Moore Man'g Co.)	\$1 00	3
65	Garden Seeds & Flower Dubs (select)	\$2 00	5
66	Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)	\$12 00	19
67	Breech-loading Pocket Rifle (Stevens)	\$16 00	24
68	Double Barreled Breech-loading Gun	\$50 00	66
69	Shot Gun (E. Remington & Sons)	\$6 00	14
70	Shot Gun, breech-loader (do. do.)	\$23 00	36
71	Creedmoor Long Range Rifle No. 1 (do.)	\$100 00	110
72	Creedmoor Long Range Rifle No. 2 (do.)	\$55 00	100
73	Creedmoor Long Range Rifle No. 3 (do.)	\$60 00	75
74	Hunting & Target Rifle (Remington)	\$22 00	84
75	Vest Pocket Pistol (Remington)	\$3 75	9
76	Revolver (Remington)	\$9 00	17
77	Turn-table Apple Parer (Goodell Co.)	\$1 00	3
78	Chinaz Apple Corer & Slicer (do.)	\$1 00	3
79	Family Cherry Stoner (do.)	\$1 00	3
80	Bay State Apple Parer & Slicer (do.)	\$1 50	4
81	"Saratoga" Potato Peeler & Slicer (do.)	\$1 00	3
82	Sewing Machine (Remington)	\$50 00	66
83	Family Scales (Fairbanks & Co.)	\$14 00	21
84	Clothes Wringer (Best—Universal)	\$8 00	16
85	Worcester's Great Illustrated Dictionary	\$10 00	18
86	Any back Volume Agriculturist	\$1 75	20
87	Any Two Back Volumes do.	\$3 50	35
88	Any Three do. do. do.	\$5 25	13
89	Any Four do. do. do.	\$7 00	15
90	Any Five do. do. do.	\$8 75	17
91	Twenty-one Vols. XVI to XXXVII	\$56 75	58
92	Any Back Vol. Agriculturist	\$2 00	25
93	Any Two Back Volumes do.	\$4 00	46
94	Any Three do. do. do.	\$6 00	15
95	Any Four do. do. do.	\$9 20	17
96	Any Five do. do. do.	\$11 50	19
97	(Each ad'l volume at same rate)		
97	Twenty-one Vols. XVI to XXXVII	\$48 80	66
98	A \$10 Library (your choice)	\$10 00	18
99	A \$15 Library do.	\$15 00	24
100	A \$20 Library do.	\$20 00	31
101	A \$25 Library do.	\$25 00	38
102	A Choice of Good Books. (See Description, p. 408.)		

Every Premium article is new and of the very best manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums, Nos. 15, 18, 29 to 33, 37 to 41, 49, 51, 54, 55, 59 to 62, 65, 75, 76, 86 to 102, inclusive, will each be delivered FREE of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. Illustrated and Descriptive List sent free to applicants.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 49.

Doubling the Crop of Strawberries.—"A. C." has seen it stated "that 1 lb. nitre, and 1 lb. ammonia dissolved in 1 hogshead of water, and sprinkled on the strawberries, will double the crop," and asks how much truth there is in the above. We suppose that the liquid is to be sprinkled over the vines rather than the berries, but in either case it would be of no use, as to be of any service the application should be made to the soil. Nitre (nitrate of potash or saltpetre) and ammonia, either or both, are good fertilizers for the strawberry, but we get any good results that may be expected from these, by the use of guano, or guano and ashes, both being excellent fertilizers for the strawberry. The reason A. C. has not seen ammonia (pure or uncombined) offered as a fertilizer, is because it is properly a gas, and can only be kept in a manageable state when dissolved in water, as the Water of Ammonia, or Spirits of Hartshorn. It is most conveniently applied in the form of the sulphate, and Sulphate of Ammonia is a regular article of trade with the dealers in fertilizers.

Gate to Prevent a Back Flow of Water.—"C. G.," Dardanelles, Arkansas. To prevent the reflux of water from a river into a creek during high water, it will be necessary to embank the creek for a sufficient height, and to put in a self-acting gate, that will open only outwards to let the creek water out. When the river rises, the pressure of the back water will close the gate, and keep it shut until the low level is restored.

Stables for 75 Sheep.—"J. B. S.," Johnstown, Pa. In the American Agriculturist for Aug., 1874, we gave illustrations and descriptions of a sheep barn, which would accommodate 75 or more sheep. This number can be procured for 15 cents. Several plans for sheep sheds or barns are given in Stewart's "Shepherds' Manual," price \$1.50.

Mr. Vick, Please Stop Growling!—James Vick—perhaps our readers may have heard of him—sells seeds and things in Rochester, N. Y. He has a grievance. Foreigners can send their seeds through Uncle Sam's mails for four cents a pound, while Americans have to pay sixteen cents a pound. Vick, it serves you right, you shouldn't be an American. Why don't you be as acute as the Detroit dealers? All they have to do is to run their stuff across the river to Windsor, and they can avail themselves of superior mail advantages just as well as if they were foreigners. We should think that a man of your enterprise would run a steamer from Charlotte, (we think that is the name of that very sandy and white-fishy place close by you on the lake), over to the other side, where no discriminations are made against a man just because he happens to be a citizen of the United States. Vick, please don't be unreasonable. What's a paltry twelve cents a pound, on the few dozen of tons you send out annually, compared with being able to sing "My Country 'Tis of Thee."

The Atlantic Monthly.—Each of the several monthly magazines has its peculiar features, which make it acceptable to its circle of readers. To say that the "Atlantic" caters to the taste of the most highly cultivated portion of the community is to repeat what every one knows. Its monthly issues are always fresh, with articles that live beyond the month, and its list of contributors includes well nigh all the names of our best writers. The prospectus for 1878 is very attractive in the names of those who are to contribute to the volume, but the publishers need only to say that the Monthly will be kept up to its own high standard, and its readers will be content. The publishers of the "Atlantic," H. O. Houghton & Co., Boston, have issued superb life-size portraits of the poets Bryant, Longfellow, and (recently) Whittier, either of which is sent for a dollar added to the subscription price.

Composting Muck with Ashes.—"A. L. W.," Kittery, Me. Twenty-five cents is too much to pay for leached ashes. They should not be worth more than half that amount in any part of Maine. Freshly burned lime at 10 cents a bushel would be preferable for the purpose. Two bushels of lime to a cord of muck would make a good compost. The lime should be air slacked and fine before it is mixed with the muck.

Herding Cattle for Fun.—"E. R. H.," Huntington Co., Pa. It is a great mistake to suppose that there is any fun in herding cattle on the Plains. On the contrary, it is one of the hardest and most dangerous of employments. Stockmen there do not want to hire inexperienced men, simply to give them opportunities for horse riding or sight seeing. To get employment on a cattle ranch, a man needs experience which has been gained through work and exposure that would kill a dozen young men who have lived in a city, and fancy they would find pleasure in the occupation. If there is any pleasant share in the business, it is that of the owners who have invested large sums in it, and can afford to take things easy while their hired men do the work.

Good Eyes and Steady Nerves are those of E. Eastman, of North Flavelhill, N. H., who, in sending for the *American Agriculturist*, at the age of 75, does it in penmanship that is really beautiful. Besides this, he sends a specimen of what he can do if he tries. Within the space of $\frac{1}{8}$ an inch long, and $\frac{3}{8}$ wide, he writes the Lord's Prayer, and without the aid of glasses; though it can not easily be read without a magnifier. A wonderful performance at any age, but at 75, it is astonishing. Mr. E. attributes this extraordinary preservation of his faculties to abstinence, during a life passed in agricultural pursuits, from strong drinks and tobacco.

"St. Nicholas," an illustrated magazine for girls and boys. It is edited by Mrs. Mary Mapes Dodge, and published monthly by Scribner & Co., N. Y., and when we say that there is not in the whole world anything of its kind that can touch it with a 10 (thousand) foot pole, it may be inferred that we think "St. Nicholas" will do. Mrs. Dodge is to be congratulated on having such publishers, and the publishers should rejoice that they have such an editor.

Subjects for Discussion at a Farmers' Club.—The following list includes the subjects to be brought up for discussion at the meetings of the Concord (Mass.) Farmers' Club, viz.: "What have we farmers learned the past year?...History, Culture, and Uses of Indian Corn....Production and Application of Manure....Can we Afford to Raise Our Stock?...Root Crops....How Farming Pays Best....How Shall we best Utilize our Hay?...Value of Experiment Stations....Cross Fertilization....Systems of Cultivation and Production....Insects Injurious to Vegetation....Are our Seasons becoming Drier?...Supply and Demand....Healthy Houses....Exhaustion of the Soil....Poultry Breeding....In and in Breeding....Opportunities for Young Farmers"....This list may be useful to other clubs, both in suggesting a choice of subjects, and as an example of some questions which can hardly be profitably discussed, being insoluble and only resulting in irreconcilable differences of opinion at the best.

Proposed Amendment of the Patent Laws.—A bill has been introduced into Congress for the protection of farmers against suits for the involuntary infringement of patent rights, by the use of machines, implements, or articles which are claimed to be illegally made or sold. It provides that no suit can be enforced against an innocent purchaser, nor unless it can be shown that the purchaser was aware of the infringement at the time of the purchase. This is a very important and much needed measure, in view of the innumerable conflicting claims as to the patent rights on chains, gates, fences, barbed fences, lightning-rods, and the scores of other things which are peddled all over the country by seductive and irrepressible agents, who sell something only to be followed by another sharper, claiming a fee for the use of what the first man sold.

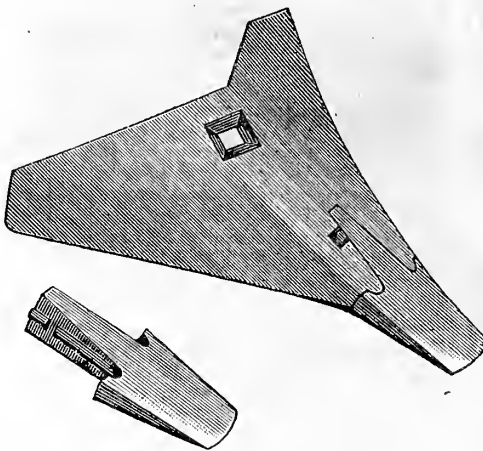
The "Gardener's Monthly."—The *Variegated Grape*.—With the December number, our able horticultural cotemporary closes its 19th volume. In these 19 years it has seen a number of other journals retire from the field; notably "The Horticulturist," founded by A. J. Downing, which fell into hands that so starved it that it was almost too weak from inanition to stand up and be swallowed by the "Gardener's Monthly." Then there was a Boston journal—we have quite forgotten its name—that started out, ignoring all things that were, or had been, in horticulture, and looked with contempt upon the slow-going "Gardener's Monthly." The most highly inflated balloon, if let alone, will, by a well known law of endosmosis, gradually diffuse its gas, and collapse. This is what happened to the Boston journal. We are glad to see that the "Gardener's Monthly" closes its volume with many signs of prosperity, among which we count an excellent colored plate of the *Variegated Grape*, *Vitis heterophylla*, which, under various names, including *Vitis variegata*, *Vitis humulifolia*, *Ampelopsis tricolor*, *Cissus quinquefolia variegata*, and others, has been in our nurseries for several years. It does not seem to have become so

generally known as its merits deserve. Its handsomely lobed leaves are abundantly splashed and blotched with light green and white; the stems of the young growth, leaf-stalks, and stalks of the fruit-clusters, are light crimson, and the abundant berries, about the size of peas, take on in autumn the richest of blues. The plant is seen at its best in a partially shaded place, as in full sun its variegations are less marked. It may be used to cover a trellis, or if grown to a stake, it will form an irregular mass of great beauty, especially when in fruit.

Prize Essay on Diseases of Swine.—The American Berkshire Association has issued in pamphlet form the \$100 prize essay on diseases of swine. This essay, with 500 pages, containing 1,600 pedigrees of swine, are given in the second volume of the Berkshire Record. The price of this volume is \$5. The essay by itself is sold for twenty-five cents. The Secretary of the Association is P. M. Springer, Springfield, Ill.

To Destroy Dewberries.—"Geo. G. P." W. Sulphur Springs, W. Va. It is a difficult matter to destroy the variety of creeping blackberry known as dewberries. Every piece of root left in the ground will make a new plant. We once freed a field from this pest by deep plowing, so as to turn up all the roots and then thorough harrowing and cultivating to tear them out of the ground. The roots were then gathered and burned. The ground was planted to corn, cultivated flat, and sown to clover at the last working of the corn. No dewberries appeared after that. Lime and manure only affect them by encouraging the growth of the crop which smother them out. Sheep will consume them, when there is nothing else to eat.

A Great Improvement in Plows.—If we could prevent the points of our plow-shares from wearing out, it would be a very great economy in preserving the shares. The New York Plow Company has adapted a new device of a movable and reversible slip point for the shares of their adamant plows. This point,



when worn on the under side, is taken out and reversed; and when worn out a new one is put in; thus the share will wear a very long time without needing to be replaced. The engraving here given shows the form of the slip-point and share. The point is keyed on with a piece of 10-penny nail. The improvement, although quite new, has already taken prizes at the New York State, and Queens Co., (N. Y.), and New Jersey State Fairs.

A Plan to Find the Seat of Inflammation.—"Farmer," recommends persons who have horses that are suffering from inflammation in the joints or muscles, to apply cold water to the suspected parts; the seat of the trouble will be found where the moisture dries off the most quickly.

Baling Manure.—"H. T. R.," Montgomery Co., Pa. We can not give you the present address of the patentee of the process for baling manure. We suppose, from the fact that we see no notices of this process made public, that the patentee has no desire to give any information respecting it.

Size of House for Fifty Hens.—"F. H. C.," Freeport, Me. A house 10 feet wide, 15 feet long, and 8 feet high, is large enough for fifty hens.

The Shorthorn Convention.—At the Shorthorn Convention, held at Lexington, Ky., Oct. 31st, the most noteworthy proceedings was a report by a vote of 30 to 9 to admit native bred animals having six crosses. Others that trace back to imported sires and dams are admissible with six crosses; a resolution to the effect that color in this breed is immaterial, and that the popular desire for red animals is injurious to the Shorthorn interest; also, the recommendation that

animals desired to be milkers should be bred early, while beef cattle should be matured before being bred. An evident impression prevailed that the milking capacity of Shorthorn cows should be encouraged.

Grass for Wet Meadow and Timber land.—"A. B. T.," Nora Springs, Iowa. Timothy and red top mixed at the rate of a peck of the first and a bushel of the latter per acre, would do well upon a moist drained meadow. Orchard grass and Kentucky blue grass, a bushel of each per acre, would be the best for open timber land.

How to Use Bones as a Fertilizer.—"L. R. S.," Bridgewater, N. Y. The easiest manner of preparing bones for use, is to burn them with wood. The phosphate of lime is all in the ashes, but the nitrogen is lost, as the animal matter is burned away. But an equivalent of ammonia could be purchased in the shape of dried blood, meat, or fish guano, for less money than it would cost to reduce the bones to a fine powder in their raw condition. 100 pounds of dry bones contain 45 pounds of gelatine, in which there are about 5 pounds of ammonia. This could be replaced by 20 pounds of sulphate of ammonia, at a cost of $\frac{5}{8}$ cents per lb., or \$1.10. As the sulphate is at once available, while the ammonia of bones is only slowly produced, half or a fourth of the former would supply an equivalent of the bones.

City Manure or Artificial Fertilizer.—"J. C. L.," Philadelphia. We would rather use some good artificial fertilizer, such as Peruvian guano, or any of the prepared special manures, than city manure at a dollar a cartload. 100 lbs. guano per acre in autumn, would be very effective, and if repeated in the spring, would be of more use, than the same value in city manure, were it of better quality, than it usually is.

Renting Farms.—"Homestead," Indiana. We certainly advocate the renting of farms by young men, who have not sufficient capital to purchase land. The ownership of land is by no means necessary to success in farming; on the contrary, there are thousands of farmers who would be better off if they had some money in their possession to stock a rented farm, rather than own some land which they have not means to cultivate. Money invested in land is well called *real estate*, because there is no possession surer than a piece of land that is paid for. But as a compensation for perfect security, the interest derived from an investment should be low. No farmer can, or should, afford to pay more than four per cent on the value of land, as rental. Interest has been, and is, too high for the farmer's profit. If farms can be rented for this rate, it would pay many now owning land to rent instead. Money used in fluctuating business, such as the cultivation of land, ought to pay from 10 to 20 per cent. Every good farmer should be able to make that profit from his working capital; that is, live stock, tools, seed, and fertilizers. Therefore, one who rents his land, provided he has a long and secure lease at a reasonable rate, should make more money in proportion to his capital, than he who owns his land. Every farmer *should*, if he can, own his own farm, and have sufficient capital to work it; but as this is impossible, then let those who cannot do both, rent farms and use sufficient capital to work them thoroughly and profitably.

Packing Eggs in Salt.—"D. H. S.," Landsburg, Pa. Eggs can not be kept very long when packed in salt. The preserving process must necessarily render the shells impervious to air, else the eggs gradually decay. There is no better preservative than linseed oil smeared over the shells, or immersing them in milk of lime, which has been described so frequently.

Questions about Eggs and Fowls.—"A. G. O. M.," Manitoba. We do not believe half the reports current about extraordinary production of eggs. Yet it may easily be true that a hen of the non-sitting breeds may lay an egg every day for a long period. The Black Spanish hens often do this, and we have personally known one to lay two eggs in one day, but there was none the next day. Hens can not well cover goose eggs and keep them warm, they are too large. If the bottom of the nest is made warm with down or feathers, a hen may possibly keep six of these eggs warm enough. A young bird needs no help to get out of the shell, unless it is very weak, in which case it is about as well for it to remain there, as it would probably fail to thrive. If the chicks should need any help, this can be very easily given when an incubator is used. Light Brahma chicks, when newly hatched, are all white; Dark Brahmas are black and brown; Plymouth Rocks are black and yellow, and Black-red Games are black and yellow, or brownish.

"Currants" and Sultan Raisins.—Our common currants, got their name from some resemblance to the fruit imported into England long ago

from Corinth. These were called "corinths," whence the name currant. The dried fruit sold in the stores as currants, are really small seedless grapes. A correspondent in a recent "Gardener's Chronicle" gives an interesting account of their culture. It appears that their production is confined to a limited district on the Gulf of Patras, and that the vines taken elsewhere are so apt to produce fruit with seeds, that their culture can not be general in other localities. The vines are trained to stakes, until strong enough, to support themselves, and found to yield, when in full bearing, from 50 to 90 bunches each. The best growers place the gathered bunches in trays, 6x3 feet, exposed to the sun. Should a rain come, the trays are stacked in piles, with a temporary roof to protect them. The fruit falls from the bunches in about six days, and the drying is completed in about six days more. The average yield is about 25 cwt. per acre, valued at the place of export at about \$100 per ton. The Sultana raisins are from another seedless grape, and their culture restricted to the hills about Smyrna. The clusters, when picked, are dipped in ley to which a little olive-oil is added; this is thought to facilitate the drying. The export of currants from Greece in 1876 was 86,500 tons, and that of Sultanas is about 10,000 tons annually.

The Attar or Otto of Roses.—The war in Turkey not only interrupts the production of wheat and other articles of food, but also that of luxuries. The district of Kezanlik is the principal source of what is known as Attar or Otto of Roses, which is properly the Oil of Roses, the others being Turkish names meaning perfume. According to a correspondent of the London "Times," the passage of the armies has left hardly a house or a crop standing in the whole region, and those who indulge in the usually costly and much adulterated perfume, will have to pay still more for it. The roses are cultivated in hedges, and the flowers collected before sunrise, are placed in a rude copper still with water, heat applied, and the water that distills is collected; after standing a day or two, the small quantity of oil that distills over with the water, rises to the surface, is skimmed off. To produce one pound of oil, 2,500 pounds of roses are required, upon an average, though the yield is affected by the season, and is often much less. The annual yield of this district was 1,800 pounds, and about as much more was produced in all the rest of the country. The perfume is also produced in India, at localities on the Ganges, and elsewhere, is all consumed in the country.

Steam Plowing.—"J. G.," Polk Co., Minn. A steam plow is used by Landreth Bro., of Pennsylvania, the extensive seed growers. We know of no others in use this side of Louisiana. There are thousands in use in Europe and many in Egypt.

"Apple Saas."—In whatever the American agricultural and horticultural journals may be inferior to the English, it is not in courtesy to their readers. The English editor is often—to put it mildly—snappish. Our correspondents are often, no doubt, as unreasonable as theirs, yet we should think it on the north side of politeness were we to adopt the manner of the "Gardener's Magazine," and reply to a correspondent thus: "'E. S.' Not having time to name your thirty varieties of apples and pears, we have sent them to the kitchen, and have not seen them since,"—a plain case of "apple saas."

Will a Grain Drill Pay.—"C. M. C.," Bradford Co., Pa. A grain drill will cost about \$30. Its use will save half a bushel of seed per acre, and add a few bushels per acre to the crop; it will also sow grass seed and grain at the same time, and sow ten acres a day. One can easily see if it will pay to use a drill or not.

Long Island Lands.—Inquiries are made by various western publishers about lands on Long Island. It appears that nearly every paper in the north-west has received a proposition to give a named space in their advertising columns in exchange for a deed of an acre of land in Suffolk Co., L. I., and inquiries are made as to the character of the lands. Long Island is very long, and on it there is land and land; having a friend who was "born and raised" not far from the tract in question, we made inquiries, and learn that this very land was sold not long ago for 50 cents an acre. Our friend says it is the "sandiest kind of sand," and gives it as his opinion that whoever buys an acre of it at any price "will get stuck."

A Novelty in Furs.—An English fur-dealer thus winds up his advertisement: "N. B.—Capes, Victorias, etc., made up for ladies in fashionable style, out of their own skins." The Italics are ours.

Trouble with Hydraulic Rams.—"R. S. C.," Wakefield, Mass. As water absorbs a certain quantity of air, the air chamber of a ram in times be-

comes emptied of air and filled with water. This will always happen sooner or later, as the water contains more or less air, or flows from a rapid stream or a quiet spring. The remedy is to remove the air chamber and empty it of water and replace it, whenever the ram stops. By not understanding this, many persons unjustly find fault with this useful machine.

Air Beneath the Skin.—"Mrs. B.," Everett, Mass. The presence of air in the cellular tissue beneath the skin, causes soft fluctuating swellings. It is known as Emphysema, and occurs as a symptom in some acute diseases, and sometimes happens when no disease is apparent. It may disappear without treatment, leaving no ill effects, or be dislodged by puncturing the skin.

Farm Apprentices.—"J. J. M.," We know of no one who would be willing to take a young man as a student on a well-managed farm, and give him board for his services. The services of a novice upon a well-ordered farm are worth less than nothing, because he requires to be shown how to do everything, which is more trouble than doing it without such help. It is customary that a certain sum be paid as an equivalent for the trouble of teaching a novice in farming. Generally, \$300 a year is charged, which covers board.

Means for Cooking Feed for Pigs.—"H. H.," Shelburne, Vt. A common open kettle of large size, set in a brick arch, would serve very well to cook the food for 30 to 50 hogs. This would cost very much less than any of the other steaming apparatus made specially for this purpose.

The Black Board in the Sunday School.—by Frank Beard. New York, Jessc Haney & Co. As its title implies, this is especially intended for Sunday School instruction, but it is very useful for one who would learn the art of black-board illustration for any other purpose. A handsome work finely and abundantly illustrated.

How Superphosphate is Made Ineffective.—"H. B. S.," Franklin Co., Pa. Superphosphate is simply insoluble phosphate of lime that has been treated with sulphuric acid so as to separate a portion of the phosphoric acid from its base, the lime, and render it free and soluble. If the superphosphate is brought into contact with lime, as on newly limed land, the free phosphoric acid at once unites with the lime, goes back or "reverts" to the condition in which it was previously, and becomes insoluble and inert. Therefore, when superphosphate is used on land that contains fresh lime, it is practically useless, and is lost so far as present effects are concerned. Superphosphate should not be used until the second year after lime.

A Profitable Hen.—F. R. Kinney, Worcester, Mass., sends a portrait of his brown Leghorn hen, (Red Ribbon 2d), which has recently died. We suppose of old age, being ten years and two months old. During her life she laid 2,151 eggs, or an average of more than 210 each year of her life. This is not the only hen Mr. Kinney has had of this breed, that has been remarkably prolific of eggs; this goes to prove the frequently published statement, that a hen can only lay about 600 eggs in the course of her life, to be a mistaken one. Mr. Kinney claims this hen to have been the most prolific one ever reported.

Chemicals for Compost.—"D. S.," Bell's Valley, Va. It is not proper to mix soluble chemical fertilizers in compost heaps. They are more effective when used alone, and spread on the land at the season when they can do most good. For composts, those substances are needed which take some time to decompose, or those fermentable matters, which communicate their action to inert materials, and so cause them to rot more quickly. Lime or wood ashes may be used along with some yard manure, to set up a destructive fermentation in such matters as swamp muck, leaf-mold, or vegetable refuse; but the latter should be in the greater proportion than the former, else ammonia will be lost.

Value of a Fertilizer.—"W. P.," Cool Spring, Del. A fertilizer containing 24 per cent ammonia, and 10 1/2 per cent soluble and available phosphoric acid, is worth in the market about \$40 a ton. These are the usual constituents of what is known as "ammoniated dissolved bone," or superphosphate. In this shape the ammonia costs 30 cents a pound, and the phosphoric acid 12 cents. Generally all the ground bone of respectable manufacturers is pure; that from glue factories being deprived of its animal matter, is consequently devoid of ammonia; adulteration is only practised by obscure persons without reputation. If you buy from well known dealers or manufacturers, there is no risk of loss unless by accident, and then reparation will be cheerfully made.

Nuts and Nubbins.

There are floating around in the daily papers, numerous items which may afford our readers a pleasant variety if introduced occasionally among our matter of fact teachings. We have a strong belief in the utility of fun and laughter, and in complying with suggestions from several that we occasionally give some humorous items, we have collected a large number from the newspapers of the day. Upon looking these over to make a selection for our columns, we were surprised to find how few of the whole we cared to print. Aside from those lacking point, many were really irreverent and making fun of those things which all right thinking persons regard as sacred; others make light of marriage, and assume that the relation of husband and wife is of necessity one of mutual deception. A large share of fun is directed to the "mother-in-law." It may be that there are such mothers-in-law as comic writers regard as the type of this excellent class of women, but we are happy to say that we have met with none. If our selection of "Nuts and Nubbins" is small, it is because we think it better not to be funny at all, than to be so at the risk of injuring the feelings of any person or class. We take these items wherever we find them, without crediting their sources.

Greenland has no cats. Imagine cats in a country where the nights are six months long.

What is the difference between a hill and a pill? One is hard to get up, and the other is hard to get down."

A person who had been listening to a very dull address remarked that everything went off well—especially the audience.

Milly (just returned from a visit to her grandmother): "Mamma, what do you want a mamma for? You're too big to put in the closet."

A little girl, yesterday, while watching the rain, turned to her mother and said:—"Ma, I guess the weather's so warm it's melting the clouds."

The intention of the old deacon was good, but the way in which he worded his notice was infelicitous. He said: "Any members of this congregation who have left off wearing apparel will please contribute the same to the poor." A quiet smile pervaded the house, and the people thought that it would be hardly the proper thing to leave off wearing apparel in the chilly December.

English farmer (after anxiously inspecting strangers): "What be they gentlemen doing, maister?"—Visitor: "Sketching your house; they are artists, and may be they will paint it."—Farmer: "Well, I am sure they be welcome; it wants it, and whitewashing, too, mortal bad."

"Some little time ago I was instrumental in getting a cook for a newly-married friend. I did not often see my friend, and last week, upon meeting a sister of the cook, I asked her how her relative liked her place. "Oh, very well, sir! the master and mistress are quite gentlefolk; they don't know anything."

A Harvard student was called to account for having publicly styled the professor of Hebrew "a first-class mule." He admitted having made the remark, but said he intended it as a compliment. "Explain yourself," said the professor. "Why, a first-class mule is necessarily a good He-bray-ist." *Nol pro.*

One thousand shingles, says a newspaper paragraph, will cover one hundred square feet of surface. One shingle, by the way, will cover six square inches of bad boy, and, if properly applied, will be productive of as much benefit and more noise than one thousand shingles on one hundred square feet of surface. Figures won't lie.

A youngster who had been warned of the evil effects of mince pie heard a mouse squeal after he had been put in his crib and asked his mother: "What dat noise?" "Oh, it's a little mousey; it won't hurt," was the reply. After a few minutes' silence the youngster remarked: "Guess de mousey been cat miss pie 'fore he go bed, au' made he ky."

One of the pleasant events of Christmastide was the presentation, in one of the leading industrial establishments of Buglington, says the "Hawkeye," of a handsome gold watch and chain to each of the employees by the proprietor. Come to think it over, we believe it was the employees who presented a gold watch and chain to the proprietor. We thought we had never heard of a precedent for the former reading.

A man near Pittsburgh, Pa., recently advertised for a bookkeeper, and within twenty-four hours he had one hundred and thirteen applicants for the position. Subsequently he sought a man for his farm by the same means, and had eight responses. These figures represent very fairly the disproportion of laborers in the various industrial pursuits. There are men needed in abundance for agriculture and other manual labor, but when a young fellow is able to write a fair hand, and balance the day's transactions in a country store, he feels above the farm, the anvil, or the bench. This is all wrong, and is of a piece with the other inflated notions that prevail.

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25 to 50 "	Barley	" "
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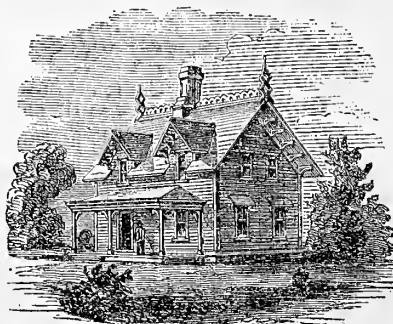
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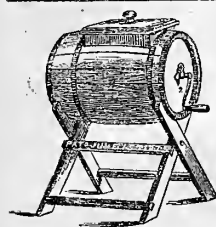
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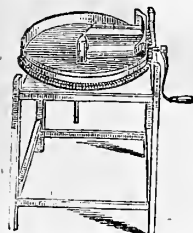
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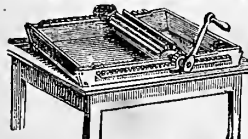
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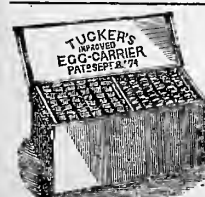
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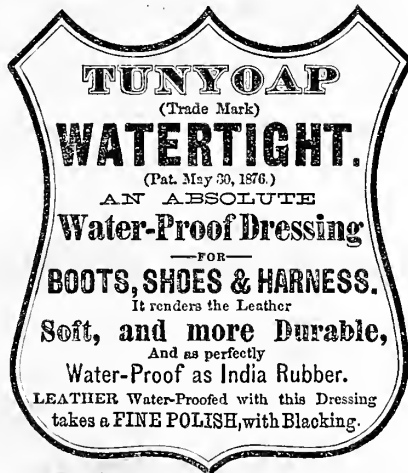
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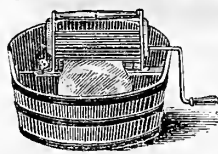
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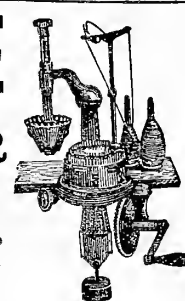


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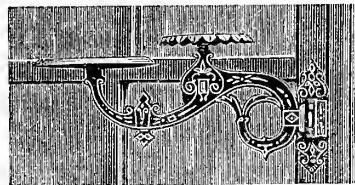
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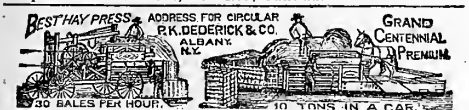
INTERNATIONAL EXHIBITION For Agricultural Machines & Implements, HAMBURG, 1878.

From the 13th to the 17th of June, 1878, under cooperation of the Section for Agriculture and Horticulture, at Hamburg, and the Union of German Manufacturers and Dealers in Agricultural Machinery, an International Exhibition of all kinds of Agricultural and Garden Implements, will be held in Hamburg, Germany. It is well known that the endeavor of the above named Union has been to liberate manufacturers from the necessity of sending their goods to all Agricultural Exhibitions, whether large or small, enabling them thus to sell their manufactures at lower rates to the farmers. This result is intended to be obtained by limiting the number of exhibitions to the commercial centers of the German Empire, to be periodically repeated. For Northern Germany, Hamburg appears to be the most favorable place, where the various railroads, etc., connect with the seaport, and this leads to the hope that foreign nations will be represented there, so that the farmers and peasantry who will visit the exhibition may have the opportunity of witnessing a complete collection of all kinds of tools for husbandry, and systems in all parts of the world.

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THE HARVEST OF 1878.

For description of **A Wonderful Improvement in Harvesting Machinery**, see page 400, October number *American Agriculturist*. For further information address Whiteley, Fassler & Kelly; Champion Machine Co., and Warder, Mitchell & Co., of Springfield, O., and The Toronto Reaper and Mower Co., Toronto, Canada.



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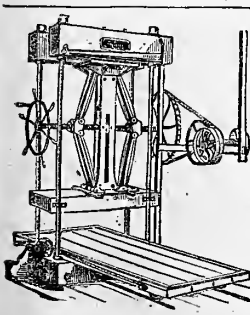
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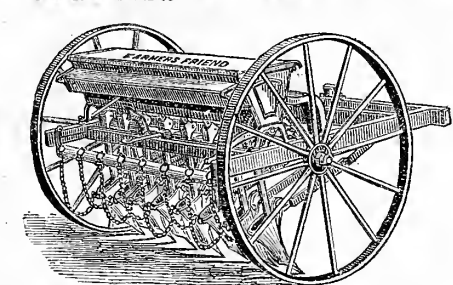
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WITH
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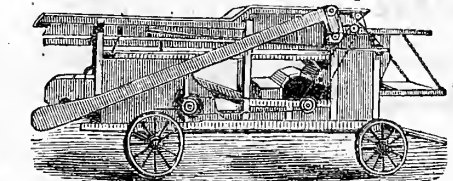
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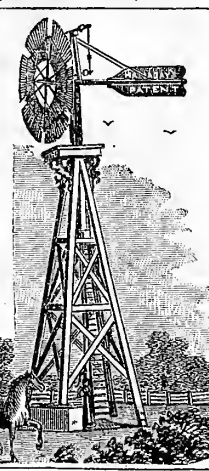
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AMERICAN AGRICULTURIST


FOR THE FARM, GARDEN & HOUSEHOLD.



VOL. XXXVII.

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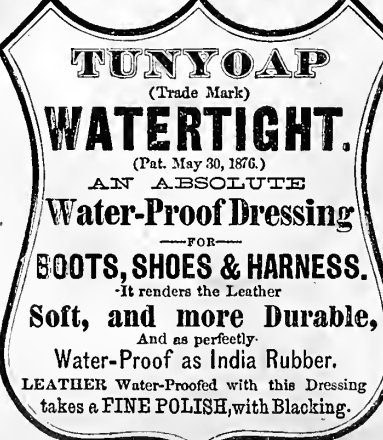
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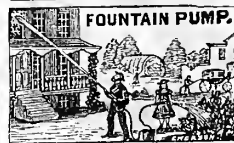
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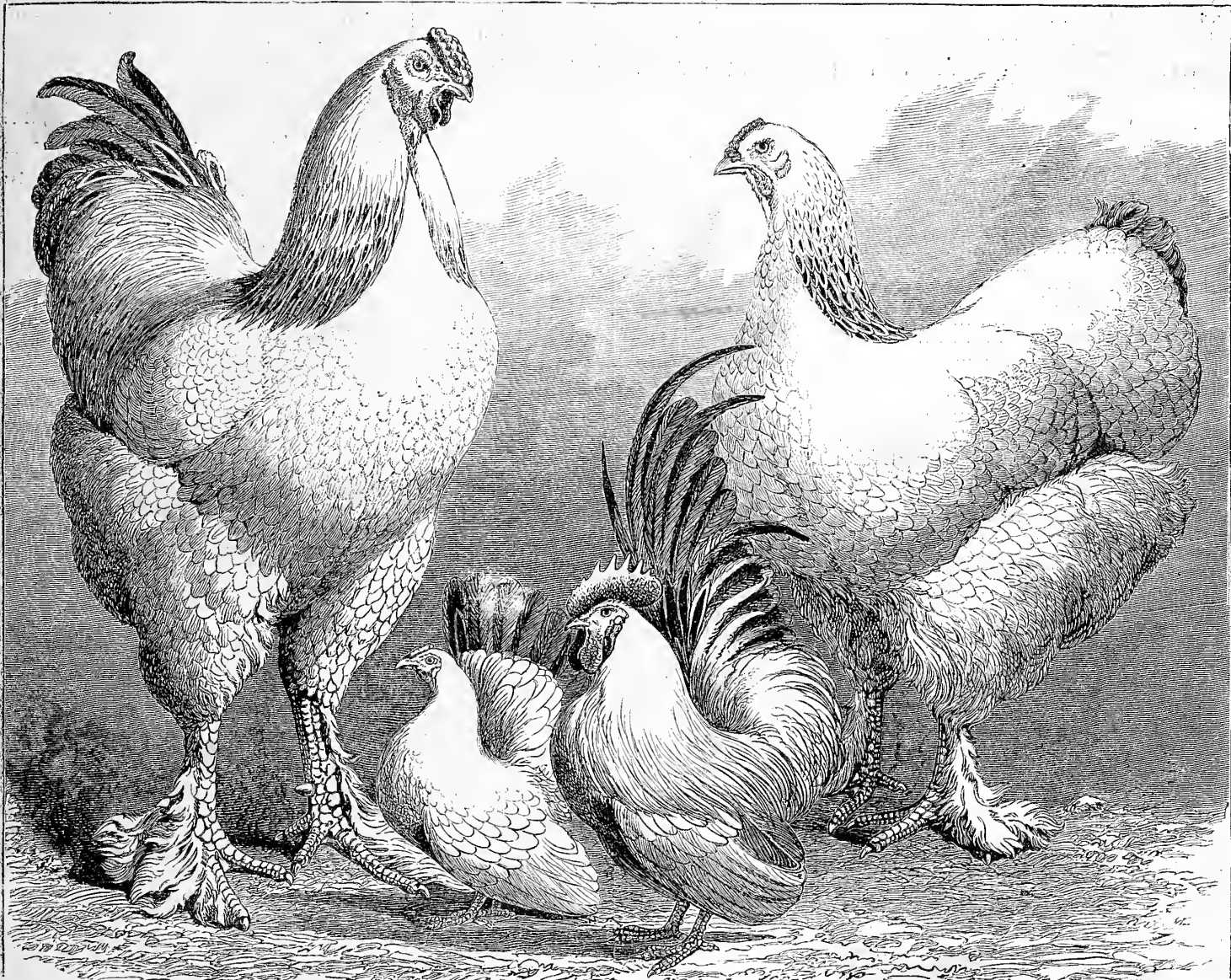
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VOLUME XXXVII.—No. 3.

NEW YORK, MARCH, 1878.

NEW SERIES—No. 374.



LIGHT BRAHMAS AND JAPANESE BANTAMS. — Drawn and Engraved for the American Agriculturist.

Portraits are given above of fowls of two conspicuous breeds. One is remarkable for its large size, and the other for its diminutive, as well as picturesque and odd appearance. The Light Brahma is now well known amongst breeders and fanciers, but is not yet nearly so popular amongst farmers, and those who rear poultry for market, as it should be. The above portraits are drawn from life from some birds bred and owned by Messrs. Magrane & Fairservice, of Woodside, near Newark, N. J. These gentlemen, who are well known amongst fancy poultry breeders, have been more than usually successful in taking premiums at exhibitions, and their birds are in great demand, not only at home, but in foreign countries. Some fine specimens were recently sold and shipped to an English breeder. After an inspection of their poultry, the selection of a pair for illustration was no easy matter, as it was difficult to choose where many were worthy of the distinction. Having so frequently described the Light Brahmas, we need not now repeat their characteristics, but merely

point out here, the small head, the lofty carriage, the broad full breast, the deep round body, the short stout limbs, all of which mark the high-bred bird, and one producing a great amount of flesh with the least offal. This is one distinguishing feature of the Brahma fowl, which renders it a profitable breed for the farmer. No other bird excels it as a winter layer, and as it is a good mother, the plentiful fluff about it serving to keep the chicks warm in the coldest weather, and as the chicks are hardy, it is easy to have very early birds. The young birds, as broilers, are remarkably juicy, well flavored, and tender, and the young cockerels of 4 to 6 months, weighing, as they easily do, 8 to 9 lbs., make most excellent roasters. As with all high-bred, pure races, the half-bred crosses of these, on the common stock, are nearly as good as the pure bred. There is no breed that excels the Light Brahma as the farmer's fowl. To introduce one young cock for every 25 common hens, would be to easily double the value of the farmer's yearly product. This we can say after several years' ex-

perience, during which our main stock has been of this breed, and having had occasionally some hundreds of cross-bred chickens for the market.

The Japanese Bantams, from which the portraits were taken, are also the property of Messrs. Magrane & Fairservice, who, to save trouble, request us to state that they have none of these birds for sale this season. These quaint little creatures are drawn in proportion to the larger birds, and weigh a pound and a quarter each. The plumage is white, excepting some of the wing feathers, the tail, and sometimes the tips of the neck feathers, which are black. The legs are bright yellow. The tail is the most curious part of this breed, being large, and carried so erect as to nearly touch the head. The legs are so short as to be almost invisible, and this gives the birds a curious creeping sort of gait. The little hens are exemplary mothers, and one of them, with a brood of tiny chicks, would be the delight of a boy or girl, as well as attractive pets for old folks. This breed has the virtue, rare amongst bantams, of being exceedingly peaceable and quiet,

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Western Dairying.—It is but a short time since the term "Western," as applied to dairy products, was held to denote an inferior quality and a low price. Enterprising Western dairymen chafed under the reproach and the injury which, to some extent, resulted from this condition of things. They went resolutely to work to change it, and have succeeded. Now the best Western creamery butter is sought by the fine grocery dealers in New York and other cities as the best they can offer to their exacting customers, and it is sold at wholesale at 5 cents per pound above the prices of the best Eastern butter. "Western," therefore, is no longer a term of reproach, so far as the butter of the best makers is concerned. But there is still large room for improvement, for common "Western" butter is yet sold for grease, and brings 8 to 10 cents a pound, when the best brings 35 to 40 cents, and poor Eastern butter brings 16 to 20. The above remarks apply to cheese. Western cheese has of late taken the first premiums at exhibitions in competition with that from Eastern dairies.

Calendar for March.

Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun. rises.	Sun. sets.	Moon rises.	Sun. rises.	Sun. sets.	Moon rises.	Sun. rises.	Sun. sets.	Moon rises.
1	F	6:35	5:50	5:39	6:34	5:51	5:35	6:32	5:53	5:30
2	T	6:34	5:51	6:3	6:32	5:52	6:0	6:31	5:54	5:56
3	W	6:33	5:52	6:32	6:31	5:53	6:32	6:29	5:55	6:33
4	T	6:32	5:53	6:32	6:30	5:54	6:32	6:28	5:56	6:33
5	W	6:31	5:54	6:32	6:29	5:55	6:32	6:27	5:57	6:33
6	T	6:30	5:55	6:32	6:28	5:56	6:32	6:26	5:58	6:33
7	W	6:29	5:56	6:33	6:27	5:57	6:32	6:25	5:59	6:33
8	T	6:28	5:57	6:33	6:26	5:58	6:32	6:24	5:59	6:33
9	W	6:27	5:58	6:33	6:25	5:59	6:32	6:23	6:00	6:33
10	T	6:26	5:59	6:33	6:24	6:00	6:32	6:22	6:01	6:33
11	W	6:25	6:00	6:33	6:23	6:01	6:32	6:21	6:02	6:33
12	T	6:24	6:01	6:33	6:22	6:02	6:32	6:20	6:03	6:33
13	W	6:23	6:02	6:33	6:21	6:03	6:32	6:19	6:04	6:33
14	T	6:22	6:03	6:33	6:20	6:04	6:32	6:18	6:05	6:33
15	W	6:21	6:04	6:33	6:19	6:05	6:32	6:17	6:06	6:33
16	T	6:20	6:05	6:33	6:18	6:06	6:32	6:16	6:07	6:33
17	W	6:19	6:06	6:33	6:17	6:07	6:32	6:15	6:08	6:33
18	T	6:18	6:07	6:33	6:16	6:08	6:32	6:14	6:09	6:33
19	W	6:17	6:08	6:33	6:15	6:09	6:32	6:13	6:10	6:33
20	T	6:16	6:09	6:33	6:14	6:10	6:32	6:12	6:11	6:33
21	W	6:15	6:10	6:33	6:13	6:11	6:32	6:11	6:12	6:33
22	T	6:14	6:11	6:33	6:12	6:12	6:32	6:10	6:13	6:33
23	W	6:13	6:12	6:33	6:11	6:13	6:32	6:09	6:14	6:33
24	T	6:12	6:13	6:33	6:10	6:14	6:32	6:08	6:15	6:33
25	W	6:11	6:14	6:33	6:09	6:15	6:32	6:07	6:16	6:33
26	T	6:10	6:15	6:33	6:08	6:16	6:32	6:06	6:17	6:33
27	W	6:09	6:16	6:33	6:07	6:17	6:32	6:05	6:18	6:33
28	T	6:08	6:17	6:33	6:06	6:18	6:32	6:04	6:19	6:33
29	W	6:07	6:18	6:33	6:05	6:19	6:32	6:03	6:20	6:33
30	T	6:06	6:19	6:33	6:04	6:20	6:32	6:02	6:21	6:33
31	W	6:05	6:20	6:33	6:03	6:21	6:32	6:01	6:22	6:33

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHAS'TON.	CHICAGO.
New M'n	3 10 33 ev.	10 21 ev.	10 9 ev.	9 57 ev.	9 27 ev.
1st Quart.	11 11 17 ev.	11 5 ev.	10 59 ev.	10 41 ev.	10 11 ev.
Full M'n	4 23 ev.	4 11 ev.	4 10 ev.	3 47 ev.	3 17 ev.
3d Quart.	23 0 6 ev.	11 54 mo.	11 42 mo.	11 30 mo.	11 0 mo.

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1878.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.]

While the past winter has been, as regards weather, one of the most pleasant, in some other respects it has been uncomfortable, not to say disastrous. Probably never before "in the memory of the oldest inhabitant," have the country roads been in such wretched condition. The impassable state of the roads in the Western, and in some of the Middle and Eastern States, has almost totally stopped traffic, and has seriously affected general business. Fortunately, many farmers had sold and delivered much of their wheat, and had thus secured a fair price in good time; but the corn crop has been left in the fields, either unhusked, or in piles, exposed to the weather. We hear much complaint of heavy losses of corn in this way, and a great loss on account of the bad condition of the bulk of what was secured. There is in this a costly and pertinent lesson to farmers. We must "mend our ways" in this respect. Without roads, civilized man is reduced to the helpless condition of the savage. Hundreds of millions of dollars have been spent in building railroads, and the bulk of the expenditure has directly, or indirectly, come out of the pockets of the farmers; but all this costly provision for carrying freight to market is totally useless, without passable country roads, by which the railroads can be fed. We have lost sight of this absolute necessity for good country roads. We have ignored the fact that bad roads are one of the heaviest taxes to which agriculture is subjected. We have submitted year after year to the annoyances and losses occasioned by our miserable roads, and still it is probable that unless attention is persistently drawn to this subject, it will be overlooked so soon as the occasion has passed away. During winter, we can neither make nor repair roads; and when "settled weather" comes, we can get along pretty well without repairing them. In this way we worry along. Our whole road system needs changing. This has been frequently set forth in this Journal, and will be again as opportunity offers. But certainly one of the most important and obligatory duties of the farmer, is the construction and proper maintenance of roads that can be used at all seasons of the year.

Hints for Work.

With the Return of Spring come floods and freshets, and much damage will result unless prevented. Wash-outs of roads, fields, yards, etc., may be averted by providing a number of outlets for the water at the places where it first gathers. Here it should be spread in several channels and prevented from gathering into a dangerous stream.

Water Furrows should be carried as little below a level as possible, and there should be so many of them that none will overflow into the others. By diverting the wash of roads from the gutters into small channels, the water charged with fertilizing matter may be spread upon the fields, and damage to the roads prevented.

Drains should be cleared of waste matters, such as leaves, and other trash that will interfere with the flow of water. In digging open drains, the earth should be thrown out upon the side opposite to that from which the surface water comes. In all the provisions made for carrying off surface water, the following principal points should be looked to, viz.: give the water the easiest possible channel; keep it in many small streams; avoid anything that will prevent easy escape for the water from the channels; provide an outflow into a stream or pond, or take care that it escapes where it will do no damage.

Planting Corn may be begun in the South this month. It is frequently planted late, with a view to save one working. The early planted corn gives the best ears, because these are well forward before the hot, dry weather of July can stop the growth; and the cultivating of a forward corn crop does not interfere with working the cotton. It is more convenient to have these two kinds of labors follow each other than to allow them to occur at the same time.

Shallow Planting is preferable for an early crop, when the soil has not been thoroughly warmed up.

Fodder Crops, such as corn planted in drills, and millet, will be found very valuable, and one can hardly have too much of them. These all go into manure for the farm; and the more fodder to feed, the more grain will be made, and the more cotton there will be to sell. By planting these crops early, damage by dry weather will generally be avoided, or a second crop may often be taken after the first is harvested. Green fodder crops exhaust the soil very little, but heavy crops require rich soil.

Top Dressing Grain Crops.—It is now that we require rapid, vigorous growth, to send up strong spears from the tillering roots. A moderate dressing of some active fertilizer, rich in ammonia, and with a good supply of phosphoric acid for the needs of the grain, is precisely what is needed. We do not point out here what fertilizer should be used. Several kinds, suitable for this purpose, are mentioned elsewhere. Where the wheat or rye was top-dressed in the fall, 100 pounds per acre may be sufficient now; otherwise 150 pounds would be needed.

Selection of Seed.—The corn crop may be greatly increased by selecting the best seed. There are varieties now coming into use which have the habit of bearing more than one ear to the stalk. If we can grow corn that produces only two ears to each stalk, it will be easy enough to produce 100 bushels per acre. But it is unsafe to experiment largely. Plant the main crop with what is known to be safe, and try new kinds in a small way at first.

Improved Seed, like improved stock, must be grown with special care, or it will rapidly go back to its original state. In experimenting with new kinds, every care should be given to keep up the vigor of the plant and maintain the character of the product.

Artificial Fertilizers.—The use of some active fertilizer early in the spring will be beneficial on almost all crops. When used with discretion, these are very profitable. But at this season only those that are perfectly soluble will be found available.

Early Potatoes.—Where the season permits of early planting, and this crop is already in the ground, it will be necessary to keep the sprouts slightly covered with earth as a safeguard against frost. By planting early, and hastening growth by frequent cultivation, the first crop may be gathered in time for a second planting. Where there is easy communication from southern fields to northern mar-

kets, few crops pay better than early potatoes, and in the Northern States, early planted potatoes may be harvested and sold in time to take a crop of corn fodder, corn, or millet, from the same land.

Flowing.—In the northern part of the country we are only as yet thinking about plowing and sowing. Here we find it best to be careful about putting the plows to work too soon. The soil should be dry enough to crumble before it is turned. Where a fallow is to be plowed for corn, it may be done as soon as may be; but sod ground should be left as long as possible, so as to get a good growth of clover to turn under. Steel and equally hard, chilled-iron plows have become so cheap and common, that every farmer may procure one. They are of easy draft, and scour perfectly in any soil.

Spring Cultivation.—In time, no farmer will fail to cultivate the fall-sown crops, just as corn or roots are now cultivated. We greatly need a machine for hoeing wheat and rye, by which the product will be much increased. At present only comparatively few farmers harrow these crops in the spring, while every one could, and should, do so. The ground should be dry on the surface before this is done, although the frost may not be out of the sub-soil. The object is to break up the crust and mellow the ground; this is done perfectly by either of the sloping-tooth harrows illustrated in Jan., pp. 18, 19.

Spring Wheat.—A new variety of spring wheat, which would be as good in its way as the Clawson, and some other new fall wheats, would be an acquisition. Two new varieties are offered by B. K. Bliss & Sons which, as far as can be judged by the appearance of the grain, seem to be well worthy of a trial. This crop needs early sowing, and a liberal dressing of Nitrate of Soda will help it amazingly.

Oats are hardy, and may be sown as soon as the frost is well out of the soil, if the seed is well covered. It will be found preferable to drill in the seed, rather than to sow broadcast. We always sow clover with oats, if it is convenient, and have never found the crop to shade the ground too much.

Clover Seed is cheap, and although it may not be sown until next month, a sufficient supply should be secured at once. No one knows how soon an advance in price may occur. Where there is no danger that the ground may wash by heavy rains or melting snow, clover seed may be sown towards the end of the month upon the snow. It will not sprout until the ground becomes warm.—The best time is on a still morning, after a little night freezing, which opens cracks all over the surface. The seed drops into these, and is covered as the ground thaws.

Meadows and Pastures are frequently injured by pasturing as soon as the snow is off. Nothing is gained, but damage results from such a course. As soon as dry enough, roll the surface thoroughly. Sod heaved by frost is restored by rolling, and stones or lumps are pressed down smoothly. The good effect will be appreciated when the mower is used. Walk behind the roller and pick up and throw into the box stones that may project enough to catch the mower blade.

Live Stock.—Although spring begins this month, for stock it is practically winter for some weeks yet. As warmth increases, some exercise in a dry yard is useful. When the melting snow or rain floods the barn-yard, the animals should be removed. It would be advisable to keep the yards dry if possible, by drains leading to a field where the liquid manure will be serviceable. By some means the feet of animals should be kept out of half frozen slop or mud in wet yards.

Feeding Young Stock.—It is often but wrongly considered that anything is good enough for young stock. On the contrary, nothing can be too good for growing animals. Coarse, indigestible, and especially musty food, is very injurious to them. It disorders the digestion, and produces diarrhoea, red-water, and impacted rumen; or paves the way for an attack of "black-leg," or other anthrax diseases, when the change to green food comes. Plants affected by smut, rust, and other fungoid diseases are, when used as food, most dangerous in their effects, and should be most carefully avoided.

Horses.—The breaking up of winter brings heavy

roads and severe work for teams. When extra exertion is called for, it should be done deliberately and with caution. Chains and harness should be strong; sudden jerks are dangerous to the teams, harness, and wagons. Above all things a driver should be patient and gentle. Willing animals should never be fretted by the obstinacy or stupidity of ignorant hired men. Just now let the farmer keep a sharp eye on his horses.

Cows.—For the management of cows at this season, see hints for the past two months.

Sheep and Lambs.—Upon warm days the ticks will be active, and the sheep may be noticed rubbing themselves against walls and fences. For ticks, a pint of a solution of Buchan's "Carbolic Dip" may be poured on to the sheep through the spout of a common kerosene oil can. Part the wool along the back, and pour the dip so that it runs down the sides.

Swine.—Sows that have not been bred, may be coupled this month. This will bring the pigs in June, and give time to have market pigs for the holidays, or fine store pigs for wintering over.

Vermis.—As the sun gets warm in the middle of the day, lice will become troublesome upon calves, pigs, and fowls. Nothing is so fatal to lice as grease. A mixture of lard and kerosene oil is very disagreeable to these pests. Put the mixture wherever it will do the most harm to the parasites and the most good to the infested animals.

Poultry.—It is now that the early layers will become broody. March or April chicks are very profitable, and every broody hen should be set at once. Give clean nests of oat-straw or hay, and put a handful of feathers under the eggs to keep them warm when the hen is off of the nest to feed.

Catarrh and Roup.—We have never seen so much disease amongst poultry as in the present season. There are many half blind hens whose sight might have been preserved by a little care. When the eyes become gummed up and the nostrils discharge, it is first catarrh, and then follows roup. Wash the heads and eyes with warm water and vinegar, and then touch the nostrils and the throat with a feather dipped in a solution of a pinch of chlorate of potash in a tablespoonful of warm water.

Notes on Orchard and Garden Work.

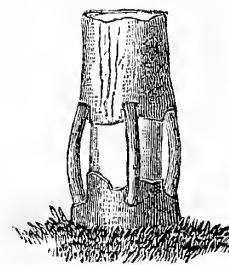
There is no month of all the twelve, for which it is more difficult to write these Notes, than March. It is on the border between winter and spring, and while in the northernmost localities winter still lingers, our readers in the Middle and Southern States are fairly in the midst of their spring work. As in other months our Notes are a little in advance of the season, as it is very easy for the reader to look back, should he find what we have indicated for March is with him practicable only for April. Those who have neglected to order trees, plants, seeds, etc., until now, should lose no time in procuring their supplies.... "Where shall I buy?" is a question frequently asked by correspondents, especially by those who have had no experience in purchasing. As we do not, knowingly, admit the advertisement of any one, from whom we would not purchase ourselves, we decline recommending one dealer in preference to another. The mail facilities allow seeds and small plants to be sent to remote localities. With regard to more bulky articles the matter of transportation is to be considered, and one will naturally purchase near home, if he can be well served, but if there is any doubt as to this, no consideration of saving of freight should prevent ordering from a nurseryman of good reputation.... In the hurry of spring work do not be tempted to plant, plow, or work the soil in any manner, until it is sufficiently dry, and will crumble as it is moved by the spade or plow.

Orchard and Nursery.

Injured Trees should be looked to at once. If limbs have been broken by accumulations of snow and ice, make a smooth wound and cover it with melted grafting wax or thick paint. Trees that are

Girdled by Mice or Rabbits, if the inner bark is not destroyed, will recover if well earthed up, or by the application of a thick plaster of cow dung and loam,

bound on by a coarse cloth, the object being to keep the parts from drying until the wound can be healed. Where the girdling is complete, and the inner bark quite removed, the only chance of saving the tree is to insert



grafts between the bark above and that below. Pieces of the shoots of the same tree are sharpened at each end, and cuts made in the bark by a chisel, pointing downwards below the wound, and pointing upwards above it; the cions, as we may call them, are then inserted

as in the engraving, and the wound covered with clay or grafting wax.

Planting need not be hurried. When trees arrive from the nursery, unpack them, keeping a sharp eye to the labels, and "heel-in" at once. This is done by opening a trench and placing in the trees in a sloping position with their roots well covered with fine soil. This should be done if only a day is to intervene between their arrival and their planting, and when thus cared for, they remain for days or weeks without harm.

Pruning before Planting is of great importance. No matter how carefully a tree may be taken up, a large share of its fibrous roots are lost, and the top should be cut back in proportion. The tree as received from the nursery will probably have four or five branches, and if planted as it is, only a few of the uppermost buds on each branch will start. It should be cut back to leave but three or four buds on each branch. Novices hesitate to do this, but it is all important to the future welfare of the tree. At the same time all bruised roots should be cut back to sound wood.

Laying out the Ground may be done in squares, the trees in rows, and opposite each other, a common plan for small orchards, but where the ground is to be used to the best advantage, the *quincunx* method is adopted, in which each tree stands at the corner of an equilateral triangle, and is equally distant from six others. For any plan, the ground should be measured and staked out beforehand.

In Planting, recollect that the tree is not a post, but a broad and shallow hole is needed, in which the roots can be spread to their greatest extent. If the soil is poor, some good compost may be added, but no fresh manure. Set the tree so that it will be just as it stood before removal. Spread the roots equally, and work the soil in among them, and especially under them with the fingers, and cover gradually. When the roots are well covered, the soil may be pressed down gently with the foot, not stamped down, and the filling finished.

Stakes, where trees are properly planted, are not needed, unless in exposed localities where there are strong winds, and in such cases the orchard should be protected by a screen of some quick-growing trees that will serve as a wind-break.

Mulching newly planted trees is often highly important, whatever will prevent evaporation from the soil will answer. In some localities stones are the most available mulch. Use bog-hay, pine-needles, straw, or whatever will cover the surface.

Recording the Orchard should not be omitted. Labels soon become obliterated, and are unreliable, but a map, or a record by rows, is permanent.

Grafting is best done just as vegetation starts. A tree that produces poor fruit is easily converted into a profitable tree. The operation is a simple one, and any intelligent boy can perform it. It is not practicable for us to repeat these instructions every year. A very full and detailed account was given in April, 1877, which may be procured for 15 cents.

Old Trees may be renovated by cutting out the crowded branches, manuring, and giving the trunk and larger branches a wash of ley or soft soap, and scraping, as recommended last month on page 51.

Crops in the Orchard.—A young orchard may be cultivated with manured crops, such as potatoes and root crops, but when the trees come into bearing, they need all the soil to themselves.

Insects.—See for these, and other timely matters, last month's Notes.

Fruit Garden.

Whatever preliminary work remains should be disposed of, such as delayed pruning of grapes, currants, etc.; the making and repair of trellises and supports for grapes, raspberries, etc., and other matters hinted at last month.

Planting should be done as early as the soil is in good working order, that the plants may get well established before hot weather. Manure is to be given liberally, and nothing is better than well decomposed stable manure. The whole soil of the garden should be well enriched, if fine fruit is expected. Ashes are useful here, and a dressing of lime once in 4 or 5 years will often be of great help. In mentioning varieties, we name a few of the most reliable, referring to the catalogues for the others.

Dwarf Trees.—See remarks on these last month. Set from 6 to 10 feet apart, according to the shape in which they are to be trained. The union of the stock and tree should be just below the surface.

Blackberries and Raspberries start early, and need early planting. Nurserymen furnish a cane with them, but this is of no use save as a handle. No fruit is to be expected the first year. The canes that grow this year will bear fruit the next. The "Kittatinny" is the best general blackberry. The "Brandywine" and "Highland Hardy" are among the leading hardy raspberries, and Miami or Mammoth Cluster, the best Black-cap.

Gooseberries.—The Downing is the best native.

Currants.—Versailles and White Grape are the best red and white. Black Naples for black. Both gooseberries and currants may be trained to a single stem like a small tree, but the prevalence of the horers make it risky. The better form is an open bush with 4 or 5 stems. Both are sensitive to hot weather, and the ground should be mulched.

Strawberries.—When cold weather is over, part the straw or hay covering over the plants to expose them freely. For varieties and new beds, see p. 102.

Grapes.—Every one who cultivate grapes largely, will have "Fuller's Grape Culturist," or other work, as a guide. The neglect of farmers to grow grapes would be astonishing, did we not consider the great amount of mystery that has been thrown around the training, pruning, and culture generally by some writers. There is no reason why every farmer's family should not have all the grapes they can eat; and there is scarcely a town or village lot so small but at least one vine may be grown.

A Vine can be carried anywhere, almost, so tractable is it. If one has a vineyard, he will follow some regular method. But grapes can be had if there is a fence, a shed, the side of a barn, or that of a house, to train them upon. Fruit may be had within a foot of the ground, or 15 or 20 feet from it. We will talk about training another month.

Plant a Vine or Vines.—Small vines, which will soon become large, may be had by mail. A vine one, or at most two, years old is better than older. You do not want several feet of old cane or vine. You want a good root, with a piece of vine long enough to have about three buds. All the rest is useless. Having a rooted plant like this, consider where you are to run your vine; give it a good, large hole, and if the soil is bad, put in some good, fresh earth. Do not put the roots in a deep hole, but spread evenly, and cover with 6 or 8 inches of earth. If but one can be set, be sure and plant that one. If room for more, and they may be put every 8 or 10 feet, set more. Before planting the vines, put a stake—a pole—6 or 8 ft. or more high, in the place, to avoid injuring the roots by driving it.

When the buds start, there will be 3 or more; rub off all but 2 of the strongest, and when the shoot from either of these is long enough to tie to the stake, tie up the strongest of the two with a soft string, and break away the other. To start right, you must grow but one shoot the first year, and keep that tied up as it grows.

What Varieties to Plant.—It is probably safe to say that the "Concord" will suit the greatest number of localities. "Brighton" and "Creveling" are among the earliest. "Delaware" is a favorite for rich soils. "Barry" and "Wilder" are, with

us, excellent. So much depends upon locality. Have a plenty of the Concord, and find out what other varieties have done well in the vicinity.

Kitchen and Market Garden.

Forwarding plants in hot-beds and cold frames will be the main work this month, except in southern localities, where the planting out and seed-sowing will be going on in some States, while still further south, marketing will have begun.

Hot-Beds and Cold Frames were treated last month as fully as is practicable in a journal. A week's experience with either will teach an intelligent person more than can a volume. In most northern localities, this month will be soon enough to start a hot-bed (see last month for details), or to sow seeds in a cold frame. In an article on page 102, on "Protecting Plants in Spring," we have endeavored to explain the principle of the cold frame. It consists in catching the sun's heat during the day, and before cooling sets in, covering the bed to retain the heat. Judiciously managed, a cold frame will be found of great use, but all

Plants Under Glass need care. The right thing must be done at the right time, or all the labor of weeks may be lost in an hour. Both hot-beds and cold frames must be ventilated, daily, at this season, or, as gardeners say, they must "have air." This is done by lifting the upper end of the sash, and holding it up by a long wedge-shaped block, which will allow the light to be varied, or by sliding down the sash, or even removing it altogether. The sun's heat in a closed bed will soon kill tender plants, and neglecting to close up on a raw and cold afternoon may check and injure the plants beyond all recovery. The care is not much, and may soon become a habit—but it must be given without fail.

Watering must be attended to, and when the soil gets packed and crusted between the rows, break it up or mellow it with the finger, or a pointed stick.

Seedlings, when large enough, transplant to other frames, giving, at least, an inch each way.

Window Boxes, as mentioned last month, will allow the few plants needed for the family garden to be forwarded nearly as well as in a hot-bed. Observe the transplanting. Expose to air whenever the weather is mild, to get strong and stocky plants.

Transplanting to the Open Ground will vary with the locality. Cabbages do not mind cool nights, if well hardened off, while tomatoes are readily injured. See p. 102, on the use of hand-lights.

Plants Wintered in Cold Frames.—The gardeners near New York remove the sashes altogether from their cabbage, lettuce, and other cold-frame plants, early in March, and transplant to the open ground as soon as that can be made ready. They do this both to harden off the plants and to use the glass for

Forwarding Lettuce.—Other frames are made ready, with rich soil, the fall before, and filled with leaves. This month, the leaves are removed, the sashes from the cabbage frames placed on these, until the soil is well warmed, and lettuce plants which were wintered in the other frames are planted in these. For details of this and forwarding cauliflower in the same manner, see Peter Henderson's article "A Double Crop," p. 63, last month.

Preparing the Soil.—Those who failed to take advantage of the favorable weather last autumn to manure and plow, or spade, all vacant ground, made a mistake, and must now wait for suitable weather. Plowing, or otherwise working the soil, is one thing that cannot be hurried without injury. If the soil will not crumble, we must wait.

Sowing Seeds in Open Ground.—Novices often err in sowing many things too early. The old way was to have a time of "making garden," sow pretty much everything at once, and be done with it. The consequence was, a glut of vegetables at midsummer, with a corresponding scarcity early and late. It is of no use to sow seeds of sub-tropical plants in the open ground until the soil gets well warmed, and chilly nights are over; while those natives of temperate regions flourish all the better before the summer's heats come on.

Early Sowings may be made of the following, as soon as the beds can be got ready; the following

to grow where sown: Beet, Carrot, Cress (Pepper-grass), Leek, Onion, Parsley, Parsnip, Peas, Radish, Spinach, and Turnip. Among those to be sown in a seed-bed for transplanting are: Celery, Cabbage, Cauliflower, Kale, and Lettuce. Parsley is often transplanted, and may be included in these. All of the gourd or squash family, all of our garden Beans, Corn, Tomatoes, and others, must be left until warm weather, or else be sown under glass.

A *Seed Drill* is a time—and back—saving contrivance, and will pay even in a moderate-sized garden. They generally are convertible into useful hand cultivators. We have tried only Allen's Planet, Jr., and Comstock's, and would not part with either for many times its cost. These, and no doubt others, are offered in our advertising columns.

Peas should go in early. "Alpha" is a little later than the "Danl. O'Rourke," under its many names, and is the earliest wrinkled pea.

Early Potatoes must be planted early. Where it is not time to plant, bring the seed potatoes to a warm room to start the eyes. We put in the earliest planting as soon as the soil will allow, and keep some litter at hand to pull over the rows, should a frosty night occur after they are up.

Sweet Potatoes are "bedded" in the Southern States early this month, either in a gentle hot-bed, or more frequently on a piece of rich soil, sheltered by a fence, where the sun will lay during the day, and the bed can be covered at night with litter or boards, to retain the heat. In either case, the tubers are laid lengthwise, and covered with rich, light soil. Cotton-seed and castor-pomace have been suggested as heating material for this use.

Asparagus Beds.—Wherever winter is over, rake off the coarse litter, and fork in the fine manure.

Odors and Ends.—Secure pea-brush and hean poles, if not done, before the leaves start.... Order seeds, if not already done.... Have extra hoes, rakes, etc., and extra parts to any machine likely to be broken.... Manure should decompose rapidly now; turn over the heaps, and add water, if at all dry.... Be prepared to meet the "potato hug" on its first appearance. If help is at command, it pays to hand-pick the first comers.

Flower Garden and Lawn.

Tree-planting, so far as deciduous trees go, should be done with the same care as directed for fruit trees. Evergreens may be left until later, and they require even more care, for if the roots once become dry, they cannot be resuscitated.

The *Lawn* must be a remarkable one if a dressing of some kind will not help it. Manure should not be used, unless so thoroughly decomposed that no seeds remain alive. Ashes, guano, or other fertilizers applied to meadow lands may be used here.

New Lawns should have the soil thoroughly prepared and well enriched. Our experience in sowing mixed seeds has not been satisfactory. For a rich, and especially a lime-stone soil, we should sow Kentucky Blue Grass, and for light sandy soils, Red-top, or that variety of it known as "Rhode Island Bent," with, perhaps, a quart of White Clover Seed to each bushel of grass-seed.

Small Plots and Margins of Lawns are best laid with sod. In sodding a plot, make the soil thoroughly fertile, and take care that there are no loose places that will settle.

Walks and Drives can not be permanent and satisfactory without a good foundation of stones at bottom, gradually decreasing in size to the surface.

Clumps of Perennial plants that have been in place for several years may be taken up, divided, and reset in fresh soil. Pæonies and a few others should only be disturbed in autumn.

Beds of Bulbs may be uncovered, and where the weather is not settled, it is well to be prepared to cover the bed if a severe night occurs.

Bedding Designs.—If any are to be planted, they should be well considered beforehand, and have the plants, whether from cuttings or seeds, in course of propagation, and look out for the

Propagation of Geraniums, Verbenas, Chrysanthemums, and other plants for decorating the grounds.

Greenhouse and Window Plants.

The increasing heat of the sun will not only be favorable to flowering, but cause plant enemies of all sorts to propagate rapidly. Regular weekly fumigation with tobacco, when practicable, or if this can not be done, the regular use of tobacco water will keep most insects in check; copious showering kills others, and removes dust.

Airing may be done more freely, and plants should be gradually hardened off to prepare them to go outside later in the season.

Fuchsias and other plants that have been resting during the winter may be started into growth.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Feb. 12th, 1878, and for the corresponding month last year, and also for the year ending Dec. 31, 1877:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Butter.	Cheese.	Flax.
27th's this m'th	381,000	3,611,000	1,731,000	61,000	504,000	537,000	180,000	416,000	546,000
25th's last m'th	397,000	3,981,000	2,463,000	67,000	504,000	546,000	180,000	416,000	546,000
SALES.									
27th's this m'th	351,000	3,976,000	2,374,000	203,000	476,000	581,000	180,000	416,000	546,000
25th's last m'th	343,000	4,104,000	3,313,000	159,000	341,000	539,000	180,000	416,000	546,000
2. Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Butter.	Cheese.	Flax.
27 days 1878.	381,000	3,611,000	1,731,000	61,000	504,000	537,000	180,000	416,000	546,000
27 days 1877.	271,000	491,000	311,000	87,000	305,000	719,000	180,000	416,000	546,000
SALES.									
27 days 1878.	351,000	3,976,000	2,374,000	203,000	476,000	581,000	180,000	416,000	546,000
27 days 1877.	221,000	679,000	1,203,000	47,000	131,000	529,000	180,000	416,000	546,000
3. Exports from New York, Jan. 1 to Feb. 13.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Butter.	Cheese.	Flax.
1878.	279,799	4,605,476	1,756,258	185,461	303,382	19,878	28,584	187,178	588,888
1877.	178,588	1,276,859	1,793,888	53,533	71,283	15,309	66,191	187,600	588,888
1876.	241,698	1,843,457	1,731,215	15,387	35,357	168,137			
4. Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Butter.	Cheese.	Flax.	Peas.
Feb. 11, 1878.	1,474,085	774,470	208,846	831,673	1,415,633	318,079			
Jan. 10, 1878.	2,886,715	1,059,909	286,333	913,898	1,087,985	321,474			
Dec. 10, 1877.	2,844,982	1,234,229	399,077	864,787	1,079,032	338,849			
Nov. 5, 1877.	984,374	2,643,502	163,949	368,429	1,770,759	328,388			
May 7, 1877.	761,636	468,809	193,016	174,375	317,831	291,654			
Feb. 7, 1877.	3,083,819	2,002,261	374,132	671,114	956,114	389,007			
Jan. 8, 1877.	3,068,010	3,077,204	341,750	905,615	1,088,104	425,406			
Dec. 11, 1876.	3,110,233	3,385,554	218,841	873,310	1,382,332	512,041			
Apr. 10, 1876.	3,930,474	2,932,140	68,429	200,381	706,282	436,942			
Jun. 10, 1876.	5,902,293	663,083	100,741	325,191	1,080,300	307,433			

Gold has been up to 102½, and down to 101¼ @ 101½, closing February 12, at 101½, as against 102½ on Jan. 12; 103 on Dec. 12; 102½ on Nov. 12; 103 on Oct. 12; 105½ on July 12; 104½ on June 12; 107½ on May 12; 104½ on March 12; 105½ on Feb. 12, of last year.

Advices from Europe, in the political and commercial lines, have been generally unfavorable to free export purchases of produce. Receipts of Breadstuffs from the interior have been liberal for the season; and the offerings of Flour and Grain in the local market have been, as a rule, in excess of the requirements of buyers, leading to a material decline in prices, in most instances, the market closing irregular. The principal operations for shipment in the Flour line have been in low grade extras, largely of the Minnesota class—and in Wheat, mainly of the best qualities of Winter and Spring, which left off rather more firmly. The Corn movement has been less satisfactory even at the reduced quotations. New York No. 3 grade of the new crop—under the quality of steamer—has attracted more attention. Barley has been fairly active, in good part for export, but at easier prices. State Rye has been more sought after, and has been held with a fair show of confidence. Oats have been depressed and unsettled, on a restricted trade, closing more steadily. Some export purchases of No. 2 Chicago have been made for the French market. Provisions have been fairly active, but hog products further receded in price, leaving off a shade stronger. The export movement has been extensive, largely on through freight account in Bacon and Lard from the West. For British and Continental markets. The better qualities of Butter and Cheese have been quoted firmer, with a good demand noted; poorer qualities generally slow of sale, and weak as to values. Eggs fluctuated widely, but left off somewhat steadier. Hops have been selling quite freely, in good part for shipment, but at somewhat lower rates. Wool has been in comparatively moderate request, and at the close quoted rather weak as to price. Tobacco has been quiet within the previous range. Seeds have been unsettled. Timothy and Flax quiet. Clover fell materially in value near the close, under free offerings, and a moderate inquiry, mostly from shippers. Hay and Straw have been in demand at about previous quotations. Ocean freights have shown less activity, and rates have declined. Grain rates by steam to Liverpool closed on the 12th of Feb. at 90½d.; to Glasgow at 8½d.; to London at 9d.; to Bristol at 10d.; to Hull at 10d.; to the Continent at 9½d.; to Liverpool,

by sail, 7¼@7½d.; London, by sail, 7¼d., ½ bush. Flour to Liverpool, by steam, 3s. 6d.; London, by sail, 2s. 3d., and by steam 3s. 6d. @ 3s. 9d.; Bristol, by steam, 3s. 6d. and sail, 2s. 3d. @ 2s. 6d. per bbl. Provisions by steam to Liverpool, 40s. @ 47s. 6d. per ton; Cotton by sail 1½@ 1½d., and steam at 1½@ 1½d. ½ bush. Grain, by sail, for Cork and orders, at 5s. 6d., and to Continental ports, 5s. 6d.; Italian ports, 5s. 3d. @ 5s. 6d. per quarter; to Lisbon, in ship's bags, 1½d. cts. per bushel; to Oporto, in ship's bags, 20 cts. per bushel.

CURRENT WHOLESALE PRICES.

	Jan. 12.	Feb. 12.
PRICE OF GOLD.	102 1-2	101 7-8
Flour—Super to Extra State	45 50 @ 5 75	44 00 @ 5 75
Super to Extra Southern.	45 00 @ 5 50	44 00 @ 5 00
Extra Western.	5 00 @ 9 75	4 85 @ 9 00
Extra Genesee.	5 35 @ 7 25	5 25 @ 6 50
Superfine Western.	4 35 @ 5 10	3 85 @ 4 75
RYE FLOUR.	3 25 @ 4 25	3 00 @ 4 00
CORN-MEAL.	2 60 @ 3 65	2 70 @ 3 10
BUCKWHEAT, per bush.	2 00 @ 2 65	1 25 @ 2 00
WHEAT—All kinds of White.	1 40 @ 1 52	1 35 @ 1 44
All kinds of Red and Amber.	1 00 @ 1 48	1 00 @ 1 40
CORN—Yellow.	56 @ 68	50 @ 60
Mixed.	53 @ 68	41 @ 59½
White.	57 @ 64	54 @ 60
State—Western.	37 @ 43	33 @ 41½
State—Eastern.	38 @ 43	35 @ 41½
Rye.	71 @ 77	63 @ 75
BARLEY.	65 @ 1 05	60 @ 1 00
BARLEY MALT.	70 @ 1 20	65 @ 1 20
HAY—Bale, per 100 lbs.	40 @ 95	40 @ 85
STRAW, per 100 lbs.	40 @ 65	40 @ 65
COTTON—Middle, per lb.	11½ @ 11½	11 @ 11½
HOPS—Crop of 1877, per lb.	5 @ 13	5 @ 13
old, per lb.	2 @ 6	1 @ 5
FEATHERS—Large Geese, per lb.	45 @ 50	45 @ 50
SEED—Clover, West. & Str. B.	8 @ 9	7½ @ 8½
Timothy, per bushel.	1 85 @ 1 40	1 25 @ 1 40
Flax, per bushel.	1 55 @ 1 60	1 55 @ —
SUGAR—Refined & Grocery.	6¼ @ 8½	6¼ @ 8½
MOLASSES, Cuba, per gal.	Nominal.	30 @ 36
New Orleans, per gal.	20 @ 48	25 @ 49
COFFEE—Rio (Gold).	15½ @ 18½	15 @ 18½
TOBACCO, Kentucky, &c., per lb.	4 @ 15	4 @ 15
Seed, Leaf, per lb.	4 @ 50	4 @ 50
Wool—Domestic Fleece, per lb.	28 @ 52	28 @ 52
Domestic, pulled, per lb.	20 @ 40	20 @ 40
California, spring clip, per lb.	18 @ 32	13 @ 32
California, fall clip, per lb.	10 @ 23	10 @ 23
TALLOW, per lb.	7½ @ 7½	7½ @ 7½
OIL—Carr, per ton.	— @ 32 00	30 00 @ 31 00
PORK—Mess, per barrel.	12 00 @ 12 50	11 25 @ 11 75
Extra Prime, per barrel.	8 00 @ 10 00	9 00 @ —
Butter—Extra, per lb.	12 50 @ 13 00	12 50 @ 13 00
LARD, in tins, & bbls, per 100 lb.	7 62½ @ 8 25	7 12½ @ 8 10
BUTTER—State, per lb.	12 @ 35	11 @ 37
Western, poor to fancy, per lb.	9 @ 38	10 @ 40
CHEESE.	5 @ 13½	5 @ 13½
EGGS—Fresh, per dozen.	15 @ 22	12 @ 18
POULTRY—Fowls & Chickens.	7 @ 15	8 @ 15
Geese, per pair.	10 @ 14	9 @ 15
Ducks, per pair.	1 25 @ 2 00	1 00 @ 1 75
Roosters, per pair.	60 @ 90	55 @ 90
Ducks, Wild, per pair.	5 @ 7	5 @ 6
GROUSE, per pair.	5 @ 2 50	5 @ 2 00
PARTRIDGE, per pair.	10 @ 1 25	75 @ 1 25
QUAIL, per dozen.	50 @ 1 00	Nominal.
RABBITS, per pair.	1 50 @ 2 50	1 00 @ 2 00
HARES, per pair.	4 @ 30	4 @ 30
TURKIES, per bbl.	30 @ 50	30 @ 50
CABBAGES—per 100.	65 @ 75	75 @ 1 00
Red.	2 75 @ 4 50	3 00 @ 4 00
ONIONS—new, per bbl.	2 50 @ 4 00	2 50 @ 4 00
CARROTS, per bbl.	1 25 @ 1 75	1 25 @ 1 75
POTATOES, Bermuda, per bbl.	75 @ 1 00	75 @ 1 00
POTATOES, per bbl.	— @ 6 00	6 00 @ 7 00
POTATOES, per bbl.	1 25 @ 2 00	1 25 @ 2 00
SWEET POTATOES—per bbl.	1 50 @ 2 50	1 50 @ 2 50
BEANS, per bbl.	50 @ 75	50 @ 75
PEAS—Canada, in bond, per bu.	82 @ 83	— @ 83
green, per bushel.	1 30 @ 1 35	1 30 @ —
BEANS—per bushel.	1 60 @ 2 75	1 50 @ 2 60
BROOM-CORN.	4 @ 7½	4 @ 7½
CELERY, per dozen.	60 @ 75	60 @ 75
CALIFLOWERS, per bbl.	1 25 @ 3 00	— @ —
TOMATOES, Bermuda, per box.	1 50 @ 3 75	2 75 @ 5 00
SPINACH, per bushel.	1 45 @ 1 60	— @ —
PEANUTS, domestic, per bush.	3 @ 7½	2 @ 7
GRAPES, per lb.	5 50 @ 6 50	5 00 @ 7 00
CRANBERRIES—per bbl.	75 @ 100	1 00 @ 1 25
per crate.	5 00 @ 9 00	2 75 @ 5 00
ORANGES, Florida, per bbl.	5 00 @ 9 00	2 75 @ 5 00

New York Live-Stock Markets.

RECEIPTS.						
WEEK ENDING	Bees.	Cons.	Culves.	Sheep.	Swine.	
Jan. 21	9,312	115	930	22,728	39,214	
Jan. 28	7,623	84	637	17,583	32,294	
Feb. 4	9,177	83	842	21,019	31,332	
Feb. 11	9,432	123	902	24,738	35,566	
Total for 4 Weeks.	35,566	440	3,251	86,279	143,756	
do. for prev. 5 Weeks.	42,052	389	4,700	106,008	194,676	
Bees. Cons. Culves. Sheep. Swine.						
Average per Week.....	8,891	110	810	21,570	35,946	
do. do. last Month ..	8,410	77	954	21,201	38,933	
do. do. prev's Month .	9,226	78	1,137	23,805	36,963	
The prices for the past four weeks were as follows:						
WEEK ENDING	Range.	Large Sates.			Amer.	
Jan. 21.....	6½@11c.	8½@10c.			9½c.	
Jan. 28.....	8 @11½c.	8½@10½c.			9½c.	
Feb. 4.....	8 @11½c.	8½@10½c.			9½c.	
Feb. 11.....	7½@11½c.	9 @10c.			9½c.	

Bees.—The market has been dull, or worse, all through the month. Every market day, however, has taught the same lesson, viz., that good stock is always salable, and indeed in demand, so that it sells itself in fact, while poor stock drags, and when the market is lifeless must be sacrificed to get rid of it, if indeed it does not pull down better stock with it. The low value of Western dressed beef, which has sold at 50¢. ½ bush. lb., has added to the general slowness of the market. At the close of our report, a loss of ½c. ½ bush. lb. was made from the previous week's prices, and the tone of business was not encouraging. Sales were made at 8½@8¾ for thin steers; 9@9½c. for good native steers 56 lbs to the cwt., and 9½@11½c. for first quality to extra of 57 to 58 lbs. to the cwt. **Cows** have been quiet and steady through the month, sometimes slow and picking up

again without change in prices; a fair test of values is given by a sale of a lot of 16 fair milkers at \$45 to \$50 per head. Poor cows have sold for \$20, and extra at \$90, calves included. **Calves.**—Prime veals have been in good demand, selling quickly at 8½c ½ live weight; poor calves sell slowly at 2¼@2½c. ½ live. Hog-dressed are in light demand, and prices rule low. Sales made at the close were at 10@11c. ½ live for prime; 9@10c. for ordinary; grassers at 5@6c. ½ live. **Sheep and Lambs.**—It is a mistaken policy for farmers to send ewes to market that bring forth lambs in the sale pens. Many such are now arriving, and do not tend to make the stock lively of sale. The market has been dull, but improved toward the close when sheep sold for \$4.50 to \$6.75 per 100 lbs.; dressed mutton brought 7c. to 9c. ½ live, and lambs 6½c. to 7c. ½ live weight. **Swine.**—After a dull market through the month; at the close live hogs were quoted, but not sold, at 4¼@4½c. ½ live; city dressed closed quiet at 5@5½c. ½ live, and light near-by pigs at 5@6c. ½ live dressed weight.

Prices of Feed.

Bran, per ton.	\$18.00 @ \$20.00
Middlings, per ton.	19.00 @ 21.00
Ground Feed, per ton.	15.00 @ 21.00
Linseed oil-cake, western, per ton.	41.00 @ 47.00
Cotton-seed-cake, per ton.	25.50 @ 40.00
Chandler's Scraps, per lb.	3 @ 4

Prices of Fertilizers.

No. 1. Peruvian Guano 10 p. c. ammonia, standard, per ton.	\$56.50
do. do. Lobos, do. do.	47.50
do. do. guaranteed, per ton, cargo F.	56.00
do. do. rectified, per ton, 9.70 p. c.	69.00
do. do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, per ton.	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone, per ton.	35.50
Mapes' Complete Manure (Vile formula) p. 1,000 lbs.	26.14
do. Spring Wheat Manure, per 1,000 lbs.	25.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, mcal. per ton.	42.00
do. do. do. extra fine. do.	40.00
do. do. do. fine. do.	38.00
do. do. do. medium. do.	36.00
do. do. do. do. do.	60.00
do. Potash Manure (Vile formula). do.	51.94
Stockbridge Corn Manure, per acre. do.	22.00
do. do. do. do. do.	12.00
do. do. do. do. do.	60.00
do. do. do. do. do.	11.00
do. do. do. do. do.	16.00
Bowker's Hill and Drill Fertilizer, per ton. do.	45.00
Sulphate of Magnesia (55 to 60 per cent.), per ton. do.	22.50
Gypsum, Nova Scotia, ground, per ton. do.	8.00
Nitrate of Potash (95 per cent.), per lb. do.	9½c.
Sulphate of Potash (actual potash 44 per cent.) per lb. do.	4 c.
do. do. (actual potash 27½ per cent.) per lb. do.	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton) \$18.00	
Muriate of Potash (actual potash 50 per cent.), per lb. do.	2½c.
Nitrate of Soda, per lb. do.	4½c. @ 4½c.
Sulphate of Ammonia (25 per cent.), per lb. do.	4½c. @ 5 c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton \$50	



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, \$1.00 a year; Two Copies, \$3; Three Copies, \$4.20 (\$1.40 each); Four Copies, \$5.30 (\$1.30 each); Five to Nine Copies, \$1.25 each; Ten to Nineteen Copies, \$1.20 each; Twenty Copies and upwards, \$1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 33 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid. **Remittances**, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or any full year, sent unbound

Good Things Free.

Our Readers are reminded that the valuable assortment of Useful and Desirable Articles, offered in October, are still available to all of them. A few hours, often as many minutes, will secure as many Dollars worth of just what one wants. During every month of MARCH, for many years, Hundreds of our readers have obtained these valuable articles without expense. We can not spare space to give even the catalogue of these articles, but will be happy to send a list, with full description of each article offered, to any and every one desiring it, who will simply give us his or her address by postal card, and say on it, "Send me Illustrated Premium List." Over 20,000 of our readers have received these premium articles with great satisfaction. Thousands may do the same this month.

Important Advertisements. Important especially to all who are on the lookout for seeds, plants, implements, fertilizers, etc., occupy the space always well filled this month. We have tried to admit none but good, trustworthy parties. It is well for every reader, whether in need of anything or not, to carefully go through these business announcements, learn what is offered, by whom, and how it is done. One is likely to get some business hint useful to himself, by seeing what others say, and how they say it. When corresponding with any of these advertisers, sending for their circulars, or otherwise, it is well to let them know that you belong to the great army of intelligent readers of the *American Agriculturist*.

Is Your Life Insured?—Every man having others dependent upon his life, whether his own family, or creditors, or who is liable to have his business or property sacrificed by his death, for want of a little ready money, is in duty bound to make the best provision possible against such contingency. A small sum paid annually for what is termed "life insurance"—a form of expression that is misleading to some minds, for it is really an insurance against a business emergency—will make one's family secure. A man thus provided will be far less worried in sickness, and his chance of recovery will be greatly increased. In this respect, it is life insurance. The failure of some Companies has made the people distrustful of all; but a perusal of the exhibit of the N. Y. Life Ins. Co., on page 109, will show at least one Company where a man can go with the utmost reliance. A request sent to the Company will bring such particulars as any one may desire to obtain.

A Most Desirable Residence, for a well-to-do family, in a delightful New England rural City, with superior advantages for Education, Good Society, etc., is advertised on page 113.

A Book for the Garden.—Probably no Book ever published on garden matters has been so useful, has made so large returns to the purchaser, as "*Gardening for Profit*," by Peter Henderson. It is the first book ever published in this country giving the practice of those who followed gardening for a living. The methods of market-gardeners, who do everything in the best and most economical manner, are generally such as may be profitably adopted by those who raise vegetables for their own use. Gardening for Profit does not necessarily mean market gardening, for one who has only a small private garden wishes to work it most profitably in making it yield the best returns for the least labor. Every one who has a garden, whether he sells produce or not, every villager, and every farmer, who can raise vegetables at all, can not afford to do without "*Gardening for Profit*." Sent from this office, post-paid, for \$1.50.

Gardening in the Country.—A large number of our readers pass the winter in cities, and go to the country for the summer. These wish some work which will tell them something about vegetables, about fruit, and about flowers. Also there are many who live in the country permanently who wish a single book that will cover all these subjects. We know of no Book which will meet the wants of both these classes, as well

as those of rural residents generally, so well as "*Gardening for Pleasure*," by Peter Henderson, which, besides the subjects mentioned, is very full as to parlor and window gardening. Sent, post-paid, for \$1.50.

A Fruit Book for Farmers.—If one is to make fruit culture of any kind an important part of his business, he will, as one of the most profitable investments he can make, procure all the works devoted to the subject. If strawberries, grapes, or other fruits are to be raised for market, he will need the treatises on those special cultures. On the other hand, those who grow fruit mainly for home consumption, and sensibly supply their families with all the kinds that may be readily cultivated, wish to have one book, that will treat sufficiently on all kinds of fruit, and will give them some account of the best varieties with plain directions for their cultivation. Precisely such a work as this is to be found in Barry's "*Fruit Garden*." We have many times regretted that the author choose just this title, as it to many conveys the idea that it is devoted to small fruits, and does not treat of the orchard. There is no other work within our knowledge that so completely meets the wants of the fruit-growing farmer as this. Its distinguishing feature is that it takes the farmer into the nursery, and shows him how fruit trees are, so to speak, made from the raw material, beginning at the very beginning, and taking him through every step, to the picking of the fruit in the orchard, and all told so plainly and minutely, that any one can follow its directions. As with fruit trees, so with all other fruit-bearing plants. We doubt if there is an operation to be performed on fruit trees and plants that is not here clearly described. Grafting, budding, pruning, are all fully illustrated, and it is shown there is no mystery about them—nothing but what any intelligent person may do. Select lists of each kind of fruit for early and late, are given, with sufficient description. Young men who find farm-life monotonous, can find an abundant variety in raising fruit, and we know of no work that is so complete a guide as this. Possibly some may not be aware of the fact that the author is of the great nursery firm of Ellwanger & Barry, Rochester, N. Y., and the same P. Barry, Esq., who is President of the Western N. Y. Horticultural Society, and Chairman of the most important committee of the American Pomological Society. The work is a thick 12mo., of nearly 500 pages, abundantly illustrated, and sent from this office, by mail, for \$2.50.

Important Farm Experiments.

How Every Farmer taking the American Agriculturist, can have an "Experiment Station."—"Science Applied to Farming" by the Farmer Himself.

No intelligent farmer, who cares to increase the yield of his crops, can have read the results of experiments with fertilizers, given by Prof. Atwater last month, on pp. 50 and 51, and this month, on p. 91, without feeling a strong desire to do something of the kind himself. Prof. Atwater, in a private note to the editors says: "If you were to hear some of the farmers talk, who made these experiments last season, you would surely get enthusiastic yourselves."—That we did get "enthusiastic" in our own way, without hearing the "farmers talk," but over the more powerful eloquence of their figures, is shown by an editorial note, "Important Farm Experiment," on p. 49, last month. A letter just at hand from an intelligent correspondent in Somerset Co., N. J., asks our advice, whether a young farmer should become "sufficiently educated in agricultural chemistry, to enable him to analyze his soils, and thus solve the problem:

'What Fertilizer can I Use to the Best Advantage?'

Our reply was in effect: Chemistry will be of great use to him, but not "for the analysis of soils." Chemistry has taught us a better method, and he was referred to Prof. Atwater's article last month. Two or more years ago, in our first account of the Connecticut Agr. Experiment Station, we stated that, though the Station itself was local, its benefits would be widespread and general. There should not only be one Experiment Station in every State, but in some States it would be well to have one in every county. The question of fertilizers is but one of the many that an Experiment Station should work at. Legislative hodies move too slowly, at least in useful directions, and while they are considering, and as often refusing, the establishment of Agricultural Experiment Stations, we propose to establish an

American Agriculturist Experiment Station,

not in this or that State or County, but on every farm in America, where the owner wishes it. That, with the exception of new land, and some specially fertile regions, our soils need, for the best results—for profitable farming—more manure than our farms furnish, requires no argu-

ment. The fact that farmers have expended millions of dollars, in the attempt to supply this deficiency, shows that they know of its existence, and are in earnest in their endeavor to supply it.

But Millions have been Wasted,

or well nigh so, in part, in the purchase of worthless fertilizers, and those in the purchase of good ones—but of the wrong kind. The want of fertilizers being admitted, the next question naturally follows:

"What Fertilizers Shall I Apply?"

Having reached this point, hundreds of farmers every spring and fall write to the *American Agriculturist*, embodying the above question. Here is the great oversight. Instead of asking us, or any other journal; instead of sending a sample of soil for analysis to find out what it lacks—a waste of time and money, as any honest chemist will admit; instead of reading over the certificates of this or that fertilizer, go directly to headquarters, and Ask the Soil Itself, "What Do You Want?"

Among the various projects the *American Agriculturist* has set on foot for the benefit of its readers, none has had more practical value, or will be so far-reaching in results, as the plan we now propose, of enabling the farmer to address the above question to his soil himself, and to show him how to interpret the answers. Those who have read the articles by Prof. Atwater last month and this, will have an idea of what we propose. The questions are to be put directly to the soil, in the form of fertilizers, which present the most essential ingredients, viz., nitrogen, phosphoric acid, potash, sulphuric acid, and lime, in the best forms, both singly, and in various combinations, i. e., these several constituents alone, and in pairs, and all together. To do this satisfactorily, each constituent must be afforded in an available form, and

Of Tested Quality,

in order that the results may have a positive value. Our plan is in brief, this—and it is simply doing on a larger scale—for the country at large—what the Conn. Agr. Experiment Station did last spring—with most beneficent results, for a few farmers in its vicinity. For so doing we are fortunate in having the hearty co-operation of the Mapes Formula and Peruvian Guano Co., with whom arrangements have been made to furnish a series of fertilizers for carrying out experiments such as have been referred to. These will be of the best quality, as shown by analyses by Prof. Atwater, and will be accompanied by full directions for making the experiments, and by blanks for noting the results, so that the latter may be preserved, and the best use made of them. Each article will be put up in quantity proper for one-tenth of an acre. The area recommended for an experiment—an acre—is to be planted with corn, potatoes, or whatever crop may be selected for the experiment, is to be divided into ten equal plots. Provision is made to apply the fertilizers to seven of these plots; the other three of the ten to be on the same crop, but without any fertilizer. The set of experimental fertilizers, A, to be used for this experiment is shown in the table, which indicates by numbers the article to be applied to each plot; the quantity to be applied, the constituent or kind of plant-food it is intended to supply, and finally the cost of each. This "set A" is to be sent complete. The fertilizers will each be put up in a separate bag, and labelled. These small bags will then be enclosed in a larger one, which will also include a pamphlet carefully and especially prepared by Prof. Atwater, giving useful information about fertilizers in general, and about these in particular, and will also give full directions for making these experiments in order that each farmer may best learn what constituents are most needed.

For His Own Soil, and His Own Crops,

and how he may afterwards supply them most economically. The farmer's question to his soil will thus be, "What do you most need that I should give you, in order that you shall give me the best yield of such and such crops?"—The what is to be answered by the experiments with set A. This may be as far as many will care to go in the first experiment. But some will wish to learn also in what form they can purchase nitrogen, phosphoric acid, and potash, most economically for their particular soils and crops, and what ones of the ordinary fertilizers in the market they can use most profitably. The following table of "Extras" shows, as before, the commercial articles that may be used, the quantity for one-tenth of an acre, the important ingredient, and the cost. Set A must be ordered unbroken. Any of the articles, under "Extras," one or more, can be ordered by their numbers at the prices opposite. Individual articles of Set A can be ordered with the Extras at the prices named, provided not less than six in all are ordered together. Suggestions as to the use of these extras will also be given in the pamphlet accompanying the sample.

How to Get the Experimental Fertilizers.

NOTE.—As not one cent of profit accrues to us, and as the enterprise will involve the expense of extra clerks,

etc., we feel that we have a right to ask our friends to make it as simple as possible.

The cost of the Experimental Fertilizers as given for the full Set A, is \$7.00, and must be ordered entire. If one wishes to experiment with the "extras," they must be ordered in the quantities and at the prices named in that table. The cash must in every case accompany the order.

CORRESPONDENCE in relation to these fertilizers should be distinct from everything else. Please observe this. If writing about subscriptions to the *American Agriculturist*, books, or any other matter, to go in the same envelope, put whatever relates to these fertilizers on a separate sheet, with date and address upon it.

When we have transferred the order to the "Mapes Formula and Peruvian Guano Co.," our responsibility ends. They will see to the packing and forwarding.

TRANSPORTATION.—If there is any choice as to route by which the parcels are to be sent, state it plainly on the order, otherwise they will be sent by what seems to be the most direct conveyance.

FINALLY AND PARTICULARLY.—The articles, and only those, in the quantities specified, are to be ordered. Recollect these are *experiments*, made for your own future benefit, and we are not in the fertilizer trade. The prices are fixed to just cover the cost of genuine fertilizers, bags, and putting up, printing, and other incidentals connected with the enterprise, without profit to anybody. It is expected that the increase of crop will, in large part, repay those who use the fertilizers, while the direct information obtained for future guidance in buying and applying fertilizers, will be of immense value. The fertilizers sent out will be such as can be bought of reputable dealers generally, and it may be convenient to many to purchase them, in the quantities advised, nearer home. The only object of arranging to have all these experimental samples sent from a single house, at first, is to secure uniformity, and purity, by having them carefully tested. The Publishers of the *American Agriculturist* receive not a penny direct or indirect, their only part will be to receive and disburse the money as requested by those concerned.

Experimental Fertilizers.

Bag No.	MATERIALS.			Price per bag.
	Kind.	A-mount.	Valuable Ingredients.	
SET A.				
I.	Nitrate of Soda.	30 lbs	Nitrogen.	1.00
II.	Dissolved Bone Black.	30 "	Phos. Acid	.70
III.	Muriate of Potash.	20 "	Potash.	.60
IV.	Nitrate of Soda.	15 "	Nitrogen.	1.40
V.	Dissolved Bone Black.	30 "	Phos. Acid	1.25
	Muriate of Potash.	20 "	Potash.	
VI.	Nitrate of Soda.	15 "	Nitrogen.	1.90
	Dissolved Bone Black.	30 "	Phos. Acid	
VII.	Muriate of Potash.	20 "	Potash.	
VIII.	Plaster.	20 "	—	.15
PRICE OF SET A.				\$7.00
EXTRAS.				
Ia.	Sulphate of Ammonia.	15 lbs	Nitrogen.	.95
IIa.	Dried Blood.	25 "	Nitrogen.	.80
IIIa.	Sulphate of Potash.	20 "	Potash.	.85
IVa.	Dried Blood.	20 "	Nitrogen.	1.25
	Dissolved Bone Black.	30 "	Phos. Acid	
VIII.	Pure Bone Meal.	50 "	Nitrogen.	1.25
			Phos. Acid	
IX.	Fine Bone, Dissolved.	50 "	Nitrogen.	1.25
			Phos. Acid	
X.	Dry Ground Fish.	50 "	Nitrogen.	1.20
			Phos. Acid	
XI.	No. 1 Peruvian Gnano.	40 "	Nitrogen.	1.40
			Phos. Acid	

The Strongest Testimonials are constantly coming in from those best able to judge by experience, as to the real value and effectiveness of our Microscope, and its marvelous cheapness. Higher institutions of learning send in for them by the dozen and twenty, to be used by classes in Botany and Natural History. Any one failing to appreciate its value above the cost of both the Journal and the Microscope, has surely failed to use it properly, and should try again after carefully studying the 14-column descriptive sheet and the microscope articles in this paper each month.

A Pupil in Horticulture.—Our Editor, who lives at "The Pines," writes: "For a number of years I have had young men here who were not properly apprentices, and not exactly pupils. A young man of decidedly horticultural tastes can here pick up a knowledge of almost everything relating to horticulture, except such refinements as the culture of stove-plants. To one who is both a student and worker—and it has been my good fortune to have had such heretofore, I can give opportunities for improvement in botany and horticulture. The position will soon be vacant. No pay, and a plenty of work, though the work is largely instructive. Applicants may address "The Pines," 245 Broadway, N. Y., with particulars as to age, previous occupation, etc.

Notes About the Microscope.

Every Subscriber to the *American Agriculturist* for 1878, can have one of our Microscopes delivered free anywhere in the United States, on remitting 55 cents as his share of the cost. The rest is borne by the Publishers.

Turn off the Diaphragm.—It is necessary to repeat:—In beginning to use the Microscope, ALWAYS turn to one side the diaphragm—that is, the rubber plate, with the round hole in it, above the lowest lens. This is only to go between the lenses when one has become skillful in their use, and wishes to examine carefully some very small thing. We hear from a number who have neglected this, and were disappointed at being unable to see clearly any ordinary object, but they were agreeably surprised on using the instrument when this was turned out of the lenses.

Read the 14-Column Descriptive Sheet, which comes around each box that holds the Microscope. We have heard from several who carelessly threw this away, taking it to be only a wrapping paper. One sheet is given with each Microscope, and it is full of important suggestions for those not already very familiar with microscopes. Any one who has lost this sheet, should forward a stamp and his address for another copy, specifying particularly "the 14-column sheet."

"Where is My Microscope?" I sent for it five or six weeks ago.... This is the substance of quite a number of letters. The answer is, in nearly every case, the same, viz.: "It was promptly forwarded to you by express."—We always send them by express, where there is an office of the Adams, American, or United States Express Companies in the town where a subscriber who is to receive one resides. But in many cases they have not been called for at the express office, and small parcels, carried at special rates, are not, as a rule, delivered to residences.—So if any one's expected Microscope has failed to arrive, please call or send for it at the express office.

A Capital Object, to examine now, or at any time, is a U. S. Bill of \$1, or any other size. All Government paper for money is now made at one mill, near Westchester, Pa., which is constantly guarded by officials, night and day. In making this paper, fine shreds of red and blue silk thread are mixed with and dropped upon the pulp. These can be plainly seen with one, two, or three lenses, by reflected light, and they distinguish genuine from counterfeit bills. The different lines, etc., in the engraving of the bills, are a pleasing study under the Microscope, either as a hand-glass or on the Stand.—P. S.—If you have no bills, borrow one for this purpose.

Many Hints, useful as well as interesting, about the Microscope, will be given in successive numbers of this Journal. Note and apply what is said about clover seed on page 103.

To Guard the Eyes.—As previously stated, we tried various plans for shortening the upright rod which supports the lenses. This needs to be 2 inches long to raise the lowest power (upper) lens far enough from the object. But every contrivance of the many suggested would add too much to the expense. It is so often desirable to use the lenses as a hand-glass, that it would not do to put a permanent knob on the top. We find no difficulty, as it is unnecessary to bring the eye quite so near to the lenses, as the top of the upright. Some suggest putting a small cork on the upper end. On page 106 another contrivance is shown.—Mr. J. H. Burnett, of Skaneateles, N. Y., writes: "... I received the *American Agriculturist* Microscope a few days since. It is certainly a very neat and complete little instrument in every particular. Some inexperienced may have expected something as large as a telescope, but to me it is a mystery that you are able to get up so complete an instrument, and send it out at the remarkably low price asked of subscribers. The rubber work is neatly finished, and I know the grinding of the lens is an expensive operation. ... But the object of this letter is to suggest a small cap or ball for the top of the standard.... Having a lathe, I turned a neat little brass cap for the top, tapering the top end of the wire for $\frac{1}{8}$ -inch to slip it on. We think it even adds to the finish, and is not the least in the way. You might suggest topping the wire with gutta percha or sealing wax.... A friend writes me that he is exceedingly anxious to get his *American Agriculturist* Microscope, and try it on a ten-cent piece, and see if it will magnify it up to ten dollars."—[That will be attended to by Congress, perhaps.]

Sleeping Upon Iron.—A reader need not be very old to recollect the cumbersome mahogany bedstead, with its four high posts, and massive headboard. Gradually the posts disappeared, and after a while it was found that in many cases a neat light iron bedstead was preferable to a wooden one. The bed has undergone no less striking changes. It is not long since "feathers"

and "bed" were synonyms, and a family must be poor, indeed, if it did not own its feather-beds. At last considerations not only of health, but of comfort, have driven out feathers, and no one accustomed to a mattress of curled hair for a few weeks would return to feathers. But everyone could not afford curled hair, and numerous have been the substitutes. Southern "moss," sponge, palm-leaf, corn-husks, (not a bad substitute if prepared at home, but miserable if done at the factory), and various other materials down to wood shavings and straw have been used. At last, some one hit upon—of all things in the world, the most unpromising for a bed—iron. There are now offered iron—or iron wire—mattresses of various kinds. One that we have had in use for some months is made by the "National Wire Mattress Co., New Britain, Conn." The makers claim that "it can not sag." We know that it has not sagged, and that it is as elastic and pleasant as one could wish. With a foundation of this kind, the mattress, or bed alone, is of much less consequence, than with the old styles. The wire mattress referred to has the merit of being packed into a small space, and is so simple that any one may set it up. After a trial of several months, we are quite satisfied that it combines many useful qualities, including comfort and cleanliness. Its appearance when set up is shown by the engraving on the last cover page of this number.

Sales of Poland-China Swine.—

D. M. Magie & Co., Oxford, Ohio, report sales of pigs for 1877 as follows:—January, 35; February, 34; March, 20; April, 7; May, 21; June, 62; July, 113; August, 43; Sept., 37; Oct., 41; Nov., 50; Dec., 43. Total, 511.

Books for Poultrymen.—"C. S. M.,"

Effingham, N. H. For beginners in the poultry business some useful hints may be gathered from "An Egg Farm," by H. H. Stoddard, (price 75c.), and the "Poultry Farm and Market," by Prof. Corbett, (price 75c.). These books are sent post-paid from this office, on receipt of the price.

Preserve the Numbers.—The numbers of this Journal during a year, bound, or stitched together, make a good-size double-quarto Volume, the reading matter of which would make many \$1.50 books in ordinary book type. There are at least 600 larger and smaller engravings. With index supplied in December, it is easy to refer to any desired topic or article. Mr. Sam'l Smythe, of Pittston, Pa., writes similarly to many others:—"I have taken the *American Agriculturist* ten years, and always carefully preserve and bind the numbers. Nothing else in the house so much interests visitors, as well as members of my own family, as these bound volumes of the *American Agriculturist*."

Pringle's New Wheats.—In an item

last month, we omitted to say that these very promising wheats were offered by Messrs. B. K. Bliss & Sons, but their advertisement was so conspicuous that those interested can have hardly failed to see it.

Good News for Long Island Farmers and Gardeners.—Long Island is one of the

great market gardens that supply New York City. Much of its soil is warm, light, and well adapted to raising farm and garden "truck." The breezes from the south, coming over the Gulf Stream, temper its climate, and even the northern winds are more or less modified in passing over Long Island Sound. The western end of the island, as far out as can be connected with the New York market by a day's wagoning, has long been a great market garden. The long lines of market wagons bound towards New York every evening, and during the night, and homeward bound during the forenoon, have been a striking feature on the roads of the island. The expenses for teams, wagons, drivers, and tolls on roads and ferries, have been a heavy draft upon the profits of the producers—expenses which are now in a way to be greatly lessened. Thanks to the enterprise and public spirit of such men as Conrad Poppenhansen, and others, Long Island is thoroughly intersected by railroads. A circular recently issued by Sam'l. Spencer, Esq., General Supt. of the railroads, addressed to Truck Farmers and Dealers, announces that during the coming season "Prompt and fast Freight Trains, at satisfactory Freight Rates will be run. At such hours as will best suit the requirements of shippers, and of the market dealers. Truck gathered one day can be shipped to market that night, and if necessary, trains will be stopped at other than the regular stations to receive the freight of those shippers who would otherwise be subjected to long hauls to depots. Arrangements have also been perfected for the delivering in market of shipments from parties that may not have provided such facilities for themselves. It is the intention of the Management to offer every possible convenience to shippers." Here is a corporation with a soul! What do our Western friends, who have so strongly, and often justly complained of the arbitrary rules of their railroads, think of this? But better still; Sam'l. Spencer, Esq., does not

claim that he "knows it all," for he says: "It is the intention of the Management to offer every possible convenience to Shippers, and correspondence is invited on this subject, or any other affecting the joint interest of the road and its patrons." Mr. Spencer's address is Long Island City, N. Y. This arrangement will bring the central, and even the eastern part of the island into easy and cheap communication with the New York markets, and make a great saving, not only of horse-flesh, but of human flesh and health, as it will do away with much of the tedious night travel. The practical good sense shown in the management of the railroads by Receiver Sharp and Sup't. Spencer, are a guarantee that the above arrangement will meet the wishes of farmers. The interests of a railroad and its patrons are always *mutual*; in too many cases this fact is ignored by "officials," resulting in dissatisfaction, and injury to both interests.

Silver-Plated Ware.—Numerous inquiries have come concerning the plated wares advertised in our columns, and we have received a few letters censuring us for advertising them at all. If any one is foolish enough to suppose that he will get *silver* when *plated* ware is advertised, we cannot help him. These wares are, as distinctly as the English language will allow, offered as *plated*. After we depart from solid silver, whether "coin silver," or "English sterling silver," we must have plate, and the real value of that plate must depend upon the honesty of the manufacturer. Plated teaspoons, for instance, may be offered at \$6, \$5, \$4, \$3, \$2, \$1, the set of half dozen, and each be good of its kind, and each well worth its cost. The great majority of the users of spoons and forks in the world, use plated spoons and forks, and when we assure ourselves that those who advertise these plated articles will give *the best possible for the money*, that they are men whose word is to be taken, we feel that it is better for our readers to buy articles which will be exactly as they are represented, than to purchase them here and there, with no one responsible for their quality. We can assure our readers that none of those who advertise plated-ware will give them solid silver; and we can also assure them that we have examined the ware, and are convinced that those who buy their plate of those who advertise with us, as Stevens Brothers & Co., and others, will get as good as can be bought anywhere *for the price*. We know of no law which will oblige people to buy plated-ware.

Sale of Choice Jersey and Ayrshire Cattle.—We are informed that Mr. Wm. Crozier, of Northport, Long Island, N. Y., contemplates a public sale of his valuable stock of finely-bred Jersey and Ayrshire cattle, Southdown sheep, and Berkshire swine, on the 10th of April next, at his farm, near Northport. To facilitate access to the farm, the Long Island R. R. Co. will carry passengers at half usual rates, and run a special return train after the sale. A favorable opportunity will here be offered to procure, at reasonable prices, some of the best imported and home-bred stock. A notice of the sale appears elsewhere.

The Poland-China Swine in England.—We are informed that the Poland-China swine sent to England by Mr. Magic, of Oxford, Ohio, the originator of this breed, have been received with much satisfaction by the purchaser, Mr. Munson. This gentleman writes that he thinks these swine are the finest of any in England; he is a breeder of Berkshires, Yorkshires, and Windsors, all of which are cast into the shade by the American pigs. This is another intimation that the opinion we have often expressed as to the excellence of American bred stock of nearly all kinds, is well founded.

Pampas Rice.—Some persons who last year advertised "Pampas Rice," did not like it at all because from their engraving and description we inferred that their so-called "Rice" was only the "Durra Corn," *Sorghum vulgare*, which was described and figured in February of last year. A person in Montour Co., Pa., evidently does not read the *American Agriculturist*, for he sends a circular of the "Pampas Rice," some specimens of the grain, and wishes to know our terms for advertising it. The grain sent proves the accuracy of our conjecture, for it is the seed of the "Durra Corn," and nothing else. Now, we have not the least objections to the cultivation of "Durra Corn." Both the grains and the stalks may be very useful, and it may be that it will be found to have been too much neglected; but let us be truthful, and call things by their right names. As "Durra," and other names given in the article referred to, this has been cultivated in the old world for centuries, and was known in this country last century. Then why call it "Pampas," or any other "Rice." It is not at all related to rice, except that both are grasses, and the grain is not near so much like rice in appearance as the "Rice Pon-Corn." Why say it is of "South American origin," when it was in common use in Africa and Asia, long before Columbus engaged in the ferry business. Gentle-

men in Pennsylvania, Tennessee, Michigan, and elsewhere, bring on all the new grains and plants you can get hold of. If useful, we will help make them known, but we shall insist that old and well known things shall not be rechristened, but that they be offered under their proper names. Farmers, whatever the grain may be, the name "Pampas Rice" is a miserable alias, a fraud.

Easy Churning.—"L. S. S.," Delaware Co., N. Y., writes that "the difficulty in churning and bringing butter late in the season, especially with the cream from one cow, can be obviated by a very simple process, viz.: after the milk is strained, set the pans on the kitchen stove and scald the milk, which will cause the cream to rise in a much shorter time, and if it is of a proper temperature, it will churn and bring the butter in from 5 to 10 minutes, of a better quality, and entirely free from any bitter or unpleasant taste."

A Manure Club.—"A. B. S.," Bucks Co., Pa. We fear the cost of transportation of manure from New York to Bucks Co., would be too great for profitable purchase from the street-car companies. If the manure was baled, the carriage would be easier. The 2d, 3d, 4th, 6th, 7th and 8th Avenue are the largest car companies in New York. It is sufficient to address either of these by their title at the City of New York.

Sundry Humbugs.



We take up our budget of Humbugs—what a heap it is that collects in a month! There are letters from correspondents, bits cut from papers all over the country, memoranda made as things have turned up, and notes of information that we get from—but we don't propose to tell all of our sources of information. Some people would "peel their eyes," did they only know the how. Well, we take up this formidable parcel, and assort it—Lotteries in one place, "Queer" in another pile; "Oil Paintings" make a pile, "Medical Matters" another, and so on through the heap. The size of these

parcels afford a fair indication of the run of a particular scheme. We at first thought that the largest pile belonged to the "Oil Painting" affair, but as Irving's

DUTCH JUSTICE,

was it *Wouter Von Twiller*? weighed the law in the case, by balancing a law-book in each hand, we find that the lottery swindle—"A Decision at Last"—is a little the heftiest. This is the concern which proposes to settle up defunct lotteries by making new drawings, and they give orders on Russell & Co. for Gold Watches and Chains, and no end of Jewels. We are so tired of this thing; and yet the circulars will come piling in by the bushel! We would gladly let this thing drop, but when we get letters, like the one before us, evidently written by an educated person, who signs himself (giving, of course, being a gentleman, his real name, also,) "A Reader of Your Paper," we wonder, really, if it does any good to expose humbugs. What can

THIS READER HAVE READ?

when for the last several months we have been obliged to give special prominence to the "Decision at Last" fraud, with Russell & Co. as executors? If anything has been set forth, ventilated, and warned against, it has been this, but yet these come—several this month, persons as innocent as can be, and ask about it in all sincerity... Here is a letter enclosing one of the "Decisions at Last" circulars, from Sharon, Pa. The writer, who is entitled to a lot of jewelry, wishes us to go to Bond street, and see if they will not change the jewelry for "a part watches," yet this very man claims to have read the Humbug articles. Do people comprehend what they read?... It is refreshing to get hold of a new swindle, but here is one that is such a miserable imitation for the foregoing, that we are tempted to think it is the same old Topeka thing, under a new name. Its circulars are headed

"CONSOLIDATION OF ALL THE LOTTERIES,"

the same old story about "unsettled prizes," and a "Committee," and a new "drawing." The orders are not upon Russell & Co., but upon J. S. Blanck & Co., Broadway, N. Y. Gold watches and chains have fallen; this scheme values them at only \$40—a base imitation. "Blanck" is a good name to use with this.

"THAT ROYAL DOMINION GIFT CONCERT,"

at St. Stephen, New Brunswick, continues to send its

schemes all over the States, and is getting to be more and more of a nuisance. Its manifestoes are more flaring than before, and include

A BAREFACED LIE,

as they print in conspicuous type, "Money can be sent by mail legally," which, as an abstract statement, is true, but it can not be sent "legally" to help any such swindles as this "Royal" one, and postmasters in the United States have not only the right, but are by law obliged, to stop any letters sent to this and similar concerns.

CHEAP JEWELRY.

Here is a letter that serves as a specimen of many. It encloses an advertisement of what is called jewelry. The writer, in Canada, wishes our opinion, but as he enclosed no postage, he did not get it. He says, "You will understand my question—is it a humbug." The advertisement contains several "lots." The first is a "50-cent Lot;" it offers a Watch Chain, a pair of Sleeve Buttons, a Stone-Set Searf Pin, three Spiral Shirt Studs, one Collar Button, and one Wedding Ring—six articles in nine pieces—just 5½ cents a piece. If our correspondent will think of the matter, he will admit that the advertisers do business to make money, and that their "goods" did not cost them anything like what they ask for them—now what does he, or any one else, want with a "wedding ring," or any of the rest, that the seller values at only 5½ cents, and which, probably, did not cost half that to make. If he thinks they are worth any more than is asked for them, let him buy and try.... A recent plant humbug is

"THE CINNAMON VINE,"

advertised by a party in Wayne Co., N. Y., who, we are sorry to say, also advertises the *American Agriculturist* along with books, groceries, and other merchandise. We know nothing of the party; he can buy the *American Agriculturist* as he can coal or gold, or other staple article, and sell it in the same shop with his other wares, and we are in no manner connected with, or responsible, for it. We hold that any one who knowingly sells a well known plant under a new name, and one that does not belong to it, commits a fraud upon the purchaser. In this case, the humbug does not consist in the plant itself, but in putting it out under false pretences. The so-called "Cinnamon Vine" is nothing more nor less than the old

CHINESE YAM, (*Dioscorea Batatas*),

which has been so long known under its proper name. We have often spoken of its utility as an ornamental climber, whatever may be its merits as a food-plant. It has good foliage, and when the plant gets old enough it produces small flowers with a pleasant cinnamon-like fragrance. It is simply an imposition to offer it under any other than its own name.... The "Weekly Visitor," Galveston, Texas, goes for that

U. S. SECRET SERVICE COMPANY

in a most lively manner. We are glad of a coadjutor in the "Lone Star State," and hope he will continue to do so—but that "Secret Service Co." is defunct. One Cincinnati humbug the less, but there is "a few more left of the same sort."

FARMERS MUST LOOK OUT

for seed and nursery swindles, which appear every spring, and of which there promises to be an unusual crop this year. If a concern writes that they have "no time to talk with customers," but do all their business by correspondence by letter—just let them alone, and buy of people whose names are in the directory, and who can be found when wanted. See article on "New and Wonderful Seeds," on p. 100... Having to do with humbugs is not calculated to give one a view of

HUMAN NATURE IN ITS BEST ASPECTS.

Money-making—or more properly money-getting, is at the bottom of all the many schemes, and whether it is to recover an ancestral estate, or to cure some inherited disease, the low aim of mere gain is always manifest, and the operators are "of the earth earthy." Imagine how welcome the change, when we found one letter at

ONLY SECOND HAND FROM THE SPIRITS.

Now there are people who do not believe in spirits, and spiritism, and mediums, and things. It makes no difference what may be proposed, in proof that spirits in the other world find their highest enjoyment in visiting close-chambers in tenement houses in this; tipping over the already rickety furniture, hanging tamborines and—when very jolly, in slapping the faces of people in the dark—still there are people who don't believe in them. Moreover, they ill naturally say that the spirits always foretell that which has happened. Now we have a document that is calculated to silence these hard-hearted persons. It comes from one Reno—who is a "Prof." and he lives in New York, at No. 205 —, but these are not advertising columns. It has a greasy look generally, being written on manifold paper. Some unbelievers may say that this is in order to send several copies of the same "revelation" to different persons, but as we have but two copies thus far, and the date is filled in with blue pencil,

we pass that by with contempt. Reno is a "Professor in Spiritualism," so he says, he holds weekly meetings of eminent spiritualists, he has a medium—and we will let him tell the rest of it in his own way:

THUS WRITES PROFESSOR RENO.

"In our last meeting our somnambulist medium, to our great astonishment, acted in a very strange and refractory manner, and only by the most stringent coercion could be brought to tell that she was influenced by a strange spirit, who tried to induce her to follow him to a certain distance, his object being to reveal a certain hidden treasure which he once got in his possession through a most hideous crime, but being haunted and chased by the officers of justice, hid the treasure, but had in his attempt to escape left the hidden place a dead secret. This he claimed allowed him no rest until the treasure should be unearthed, which we were willing to do, but he objected, saying: 'Only the man on whose property the treasure is hidden shall raise it.' There and then, through our medium, revealed your name and address, and he in spirit showed the exact place the treasure is hidden, and enjoined her that she should in my company show the place to you in person. We asked for further particulars, and he requested us to inform you of this, and you would send the necessary traveling expenses, and give us one-fourth of the value of the hidden treasure. After this the medium awakened from her somnambulist state. I now consider it my most imperative duty to inform you of this, and leave it to your own judgment to act in the matter as you please. We are naturally very anxious to secure our share of the treasure, and enjoy you to take the matter in hand at once, and forward \$25, the necessary traveling expenses; and when you send the above amount, send only by letter. Address, etc."

It all went very well until we got towards the end, and then our faith in spirits and professors of spiritualism got shaky, and we lost faith, just as the poor child did when she found her doll stuffed with saw-dust—"Forward \$25!"—the "spirits" are as bad as embodied humbugs.

MATTERS AND THINGS IN BRIEF.

"THE QUEER," or counterfeit money fraud though subsidized, is by no means dead; we have perhaps one new phase of it a month, while formerly there were 20 or more. We have said little about it of late, as it can harm no honest person. Frank A. Johnson sends out circulars in which he offers his as "cigars." Take care, Frank, a cigar has one end that burns. We would say to those good people who, astounded at receiving a proposition to purchase counterfeit money, propose to us a plan to catch the chaps, that it will do no good. They have no counterfeit money, and can not be troubled for offering what does not exist. We have some curious developments in the NOTE BUSINESS—farmers, and all others, be careful what you sign. Here is one who wants our opinion about \$3 watches. We guess they are worth about the same price as hard clams—say 50c. a peck. A friend sends a prospectus of a book called the COMPLETE HERBALIST, by one O. Phelps Brown, and asks our opinion. According to the circular it is the "teachingest" sort of a book. When we read of this book that "It teaches, by beautiful engravings, the exact similarity in shape, which exists between medical plants used for the cure of certain organic diseases and the organs themselves," we stop and say bosh! Brown should have lived some centuries ago when people believed in signatures—he is out of place in this age. Medical matters must go over to another month. The ass who sends long anonymous letters about a certain class of medical matters, is advised to save his post-stamps.

A new Industry for the South.—

It would be strange, indeed, if the rich soil and fine climate of the Southern States should be fitted for the production of one staple article only, viz. cotton. The fact is that the Southern States will in time become the richest portion of the country, agriculturally, because of the great diversity of products possible. A new opening has been found for enterprise, viz.: the production of winter butter, and we learn that one farmer of Tennessee, and another of Arkansas, are sending fresh grass butter to Boston market this winter. These farmers keep Jersey cows, which pasture during the winter upon the native grasses, of which Blue Grass is the chief. Blue Grass for winter pasture, and Bermuda Grass for the summer, will sustain cows in fine order, and there is the whole winter for the production of butter. Why should not southern farmers avail themselves of the advantages of their climate and raise dairy products at the time when northern dairies are suspending operations?

Kerosene Oil for Sheep Scab.—"J. W. D., Limestone, Texas. It would not be advisable to pour kerosene oil along the spine of a sheep to cure the scab; the effect would be to cause sores where it was applied, and it would fail to reach the vermin beneath the scabs. As a necessary preliminary to the successful application of any remedy, the scabs must be broken so

that the insects may be exposed to the action of the remedy used. In using any dip whatever, this must be done. A rough corn cob is useful to effect the rupture and removal of the scabs. If it is desired to use kerosene oil, we would suggest that it be poured upon the scabby parts of the skin, and that these be rubbed with a corn cob or something rough—a cattle card might answer the purpose—and the oil made to penetrate to the bottom of the scab. The application should be repeated to destroy the mites hatched from eggs that have escaped. When a dip is used, the temperature should be 120 degrees, as the heat greatly helps the effect of the application.

Breaking a Colt.—"J. P. M., Somerville, N. J. A vigorous colt 2½ years old, may be safely broken to the saddle. At this age hundreds of English horses are not only broken, but are put through a severe course of training, and work on the race-course. One of the most popular races is only open to 2-year-olds.

Roots Flavoring Milk.—"M., Morris Co., N. J. Mangels and other roots will flavor cows' milk, unless they are fed at the milking time. If fed then, the volatile odor and taste passes off through the skin before the next milking time.

Jersey and Guernsey Cattle.—"S. C. D., Moorestown, N. J. The Guernsey cattle have not been bred so much for fancy points or beauty as the Jerseys, and they are consequently, on the average, better butter cows—that is, a herd of ten Guernsey cows, promiscuously gathered, would probably yield more butter in a given time than ten unselected Jerseys. The Jerseys have no doubt suffered from the fashion of breeding for color and points, which has been rife of late years, and there is no doubt that first-class butter cows are more plentiful in Guernsey than in Jersey.

How to Apply Lime.—"Enquirer."

There is but one profitable way to apply lime to land that needs it, and that is to scatter it upon the surface, in an air-slaked or dry, powdered, condition. This may be done in the fall or early in the spring. It will be a waste of labor, and a loss of manure, (not of lime), to compost the lime with manure. There is enough hard work to be done upon the farm, without making useless labor by devising unheard of methods of doing simple things.

The Business of Sheep Raising.

—"J. W. B., New Orleans, La. It by no means follows that any amount of money can make sheep raising profitable. On the contrary, the more money invested when there is no experience, the greater risk there is of loss. Where a person knows nothing about sheep, he had better not invest money in the business until he has learned something about them in a practical way, either by living for a time with a shepherd who knows his business, or by hiring a competent shepherd from whom he may learn.

Southern Agriculture.—The Department of Agriculture of the State of Georgia has issued an interesting report, giving a comparative total yield of crops, with cost and profit, under different systems of labor. In this report is also given a statement of the general condition of farming in Georgia, of which a very good idea may be gained from the following extract:

"there seems to be a tendency on the part of farmers, generally, to change their programme. Their wheat fields had their attention earlier than usual this season; they are raising more potatoes and root crops for stock, and investing their little surplusage in improved fruit. Our county has largely patronized the Atlanta and Augusta nurseries the past season. Improved stock is sought by almost every one. We are paying more attention to our compost heaps, and there is manifested a greater disposition to improve farms than formerly." With such a spirit as this abroad, Southern agriculture cannot fail very soon to become flourishing and profitable.

Seeding with Buckwheat.—"S."

Clover may be sown with buckwheat early in July with success. But it would not be advisable to cut the buckwheat when in blossom and leave it upon the ground for a mulch. By the time the buckwheat is ripe, the danger from heat and dry weather will have passed away.

"Brazilian Artichokes."—The mention of artichokes, especially the variety to which the name "Brazilian" has been applied by Mr. Cohurn in his excellent and popular work on "Swine Husbandry," has caused numerous inquiries as to this variety. There are several varieties of the common Jerusalem Artichoke; there are those with white, red, and yellow skin, and of each of these there are forms with long and roundish tubers. The term "Brazilian" has been applied by some western growers to a variety that produces a rounded, red-skinned tuber; very productive, and does

not spread so much as the common sorts. It is a convenient distinguishing name for the variety, but no more indicates that it came from Brazil than the name Jerusalem does that the common form come from that city, or that Irish potatoes originated in Ireland. Those who have them for sale should advertise, as we have inquiries.

Cultivation of Lucern or Alfalfa.

—"G. W. F., Waynesburg, Ohio. Lucern, or as it is called in California, "Alfalfa," can not be cultivated profitably where red clover will thrive. It is a plant suited for a dry climate, and is a very valuable fodder plant, but clover surpasses it in value and in ease of cultivation. Where heavy liquid manuring could be given, or the crop could be irrigated, it would give a greater yield than clover. We have tried it, but do not care to repeat the experiment. We are satisfied with red clover.

Grinding Bone.—"R. E. C."

If a sufficient quantity of bone can be procured and used to pay for the use of a mill, it would certainly be desirable to work up all the bones for fertilizers that a district could furnish. The Bogardus "Eccentric Mill" is an excellent machine for grinding bones into fine flour, and can be worked by a 6-horse power engine. There are other mills suitable for this purpose, mentioned in the advertising columns. It is not necessary to make fine ground bone into superphosphate, as it is valuable in its raw state.

Endless Chain Dog-Power.—"A. S. S., Portage Co., Ohio.

There are several small tread-powers made for a sheep, calf, or dog, on the same principle as the horse-powers. These cost about \$25. The New York Plow Co., of New York City, exhibited a very good one at the recent American Institute Fair.

Pipes for Conveying Water.—"Subscriber," Lynnfield, Mass.

It is practicable to convey water 2,300 feet from a reservoir with a fall of 30 feet, so as to have the water rise at the outlet to within a foot or two of the level of the reservoir, and escape freely. The first 1,000 feet should be a 1½-inch pipe, the second 1,000 may be 1 inch, and the last 300 feet may be ¾ or ½ inch. Galvanized iron pipe would be best. If a large flow is desired from the outlet, the pipe may be wholly of 1½ inch.

What Proportion of Eggs hatch after shipment.—"R."

If eggs that are shipped by railroad are properly packed and are not too stale, we should expect that as large a proportion would hatch as of any others. We have hatched eggs that have been shipped in barrels 1,500 miles without any unusual loss.

Varnished Cloth as a Substitute for Glass, to cover hot-beds and cold frames.

In February, 1874, we published an article by that wide-awake horticulturist, the late J. B. Root, of Rockford, Ill., in which he gave directions for preparing sheeting as a substitute for glass. He had his sheeting sewed together and hemmed, of a size corresponding to four hot-bed sashes. He melted together, in an iron kettle, Linseed Oil, 1 quart; Sugar of Lead and Rosin, in fine powder, 1 ounce of each. When thoroughly melted and incorporated, he applied this, hot, with a brush, to the cloth, stretched for the purpose on a frame. In two days, he gave another coat. When dry, he used this to cover his frames. No doubt a frame, covered with this—as a shelter—would be a great help, but it is in no respect equal to glass, and as it will, no doubt, shut out at least half of the light, it cannot be used as a substitute.

Basket Items continued on page 113.

Catalogues Received.

See page 8 in January last for other catalogues. SEEDSMEN.

Some of our seedsmen append to their seed catalogues lists of small fruits, greenhouse and hedging plants, etc. And we may say that they, at any rate those in the cities and large towns, keep on sale implements, fertilizers, haskets, aquaria, and all such articles.

R. H. ALLEN & Co., 189 and 191 Water St., N. Y. This catalogue, while not neglecting garden and flower seeds, is especially full in field and farm seeds, novelties in the way of fodder and root crops and grasses.

BENSON, BUREE & Co., No. 223 Church St., Philadelphia, Pa.—Garden, field, and flower seeds, with interesting novelties in each. They are also engaged in live stock of all kinds.

HUGO BEYER, New London, Henry Co., Iowa, offers vegetable and flower seeds "grown in" and for the West. The preface shows that his heart is in his business.

B. K. BLISS & SONS, No. 34 Barclay St., New York.—An enormous treatise of over 200 pages, including everything in their line. Also a special list of novelties.

WM. E. BOWDITCH, No. 645 Warren St., Boston, Mass.—To his general catalogue of vegetable and flower seeds are added one of plants, and lists of later novelties.

D. C. BRAINERD, Mount Lebanon, N. Y., has a handsomely illustrated catalogue of "Shakers" seeds, made additionally useful by an Almanac and Rural Register.

ALFRED BRIDGEMAN, No. 876 Broadway, New York.—Probably no name, except that of Thorburn, is more thoroughly identified with New York horticulture. Mr. B.'s catalogue is, as usual, neat, and up to the time.

W. H. CARSON, No. 125 Chambers St., N. Y.—The excellent taste and neatness of this catalogue, which includes specialties, are characteristic of the author, than whom we know of no more competent seedsman.

JOHN LEWIS CHILD, Queens, N. Y.—One need not be troubled about prices, as all seeds are put up in "Half Dime Packets."

HENRY E. CHITTY, 169 Main St., Paterson, N. J., offers flower seeds in collections at low rates, and the same with greenhouse plants.

COLE & BROTHER, Pella, Iowa, we judge are prospering, as this year's catalogue is a great improvement on former ones. To induce people to buy their seeds, which are largely grown by themselves, they offer the *American Agriculturist* as a premium on easy terms.

COMSTOCK, FERRE & CO., Wethersfield, Conn., include an almanac and useful calendar in their catalogue. The name is so thoroughly identified with the best of Connecticut seeds, that we need add nothing more.

O. M. CROSBY & GORDEN, Danbury, Conn.—The sight of the address brought to mind the "Danbury News Man," who writes a preface to the catalogue, but it is sensible enough to stand on its own merits.

FERRIS, MINARD & CO., Poughkeepsie, N. Y., offer among their vegetable and flower seeds, several novelties, besides various things needed by the gardener and rural resident.

D. M. FERRY & CO., Detroit, Mich., take pride in the fact that their beautiful "Seed Annual" is a "Michigan production." With abundant other illustrations, they give interesting scenes on their seed farm, and a fine colored plate of a "New Dwarf Japanese Cockscomb."

J. A. FOOTE, 512 Main St., Terre Haute, Ind.—Has a full list of vegetable seeds, and among them some excellent specialties, such as the "Terre Haute Nutmeg Melon," which we know to be good. "Green Fringed Lettuce," etc. Also flower seeds and plants.

JAMES J. H. GREGORY, introducer of the Hubbard Squash, sends from Marblehead, Mass., his catalogue, so unlike all others in form and contents, that it is always a pleasure to get it, and to read of the novelties and specialties—but he does not forget the old stand-bys.

R. D. HAWLEY, 492-493 Main St., Hartford, Conn., sends his catalogue of Wethersfield garden and field seeds, and offers a large number of useful implements.

PETER HENDERSON & CO., No. 35 Cortlandt St., N. Y., present in their catalogue in hold letters, "Everything for the Garden," and when we look at its contents we are forced to admit that well nigh "everything," except sunshine and rain, and other unobtainable things, is to be found among their novelties and regular stock.

HOLLISTER, CARTER & CO., St. Paul, Minn., offer a select list of field, and garden seeds, largely grown by themselves. Also sorghum machinery and implements.

A. HOWARD & CO., Pontiac, Ill., flower and garden seeds, a selection of plants, and useful cultural directions.

CHARLES F. LANE, Koshkonong, Wis., has a remarkably full catalogue, largely filled with cultural directions. Also requisites for the apiary, implements, books, etc.

NANZ & NEUNER forgot to say so, on their title page, but we have every reason to believe that they are at Louisville, Ky., and they offer so large a list of both seeds and plants, that we are at a loss to classify their catalogue, which is very full, including novelties in both.

PRICE & KNICKERBOCKER, 80 State St., Albany, N. Y., full, neat, and well illustrated list. They do not need to announce themselves as "successors to," any one. A "Knickerböcker" should be at home in Albany, if any where.

W. H. REID, Rochester, N. Y., sends a well illustrated catalogue, with colored frontispiece, as "Reid's Illustrated Floral Triphart for 1878."

R. M. SHUMWAY, Rockford, Ill., has a catalogue, amply illustrated, and with very full cultural directions, which must be very useful.

H. N. SMITH, South Sudbury, Mass., offers certain flower seeds in collections at very low rates.

THE PLANT SEED COMPANY, (what an appropriate combination of names), St. Louis, Mo., have a catalogue as large, as full, and as amply illustrated as in former years—and that is all we need say.

J. M. THORNBURN & CO., No. 15 John St., N. Y. This is the oldest seed house in New York, and does an immense business in the quietest manner. This year's catalogue is a departure from former years, in as much as they include garden and field seed, flower seeds, and spring bulbs in one neat and comprehensive list, which of course includes "novelties" of the year.

ISAAC F. TILLINGHAST, Factoryville, Wyoming Co., Pa., with a general stock, offers a number of specialties, particularly among potatoes.

VANCEBILT BROTHERS, No. 23 Fulton St., N. Y., a condensed list, offering a full assortment in all departments, including machinery.

JAMES VIEK, Rochester, N. Y., in his "Catalogue and Floral Guide," presents the same abundance of illustration, and neatness, as formerly, and he does not forget the old standard varieties in offering his novelties.

W. C. WILSON & CO., 45 West 14th St., N. Y., well known dealers in plants, now offer seeds, gladioluses, and other spring bulbs, in a catalogue "as neat as a new pin."

DAVID R. WOOD, Morrisville, Lamolille Co., Vt. Vegetable seeds, seed potatoes as a specialty, and the Arnold Poison Distributor first figured by us in August, 1876.

E. WYMAN, JR., Rockford, Ill., gives special prominence to flower seeds and summer-flowering bulbs, and offers vegetable seeds in collections at low rates.

FLORISTS.

Where are they? we have, thus far, save those noted in January, received but a few catalogues in this department—the rest no doubt will come next month.

BENJ. A. ELLIOTT & CO., 114 Market St., Pittsburgh, Pa., calls his catalogue "The Garden." It is largely occupied by useful directions for cultivation, and also gives a list of new and old plants.

ELLWANGER & BARRY, Rochester, N. Y., in their Catalogue of Greenhouse and Bedding plants, have various novelties, including the new Coleus figured last month.

PETER HENDERSON, 35 Cortlandt St., N. Y., prefaces his catalogue with a splendid chromo-lithograph of that fine new Hydrangea, "Thomas Hogg,"—and the white Tea Rose "Corolla Cook."—His catalogue, as usual, presents the novelties of the season, and all those which have ceased to be novelties.

C. H. HOVEY & CO., No. 22 Tremont St., Boston, under the Boston Museum, floral decoration a specialty.

GEORGE SUEH, South Amboy, N. J., in his spring catalogue, makes a specialty of gladioli, but if there is any novelty of the season that is not included in it, we have failed to discover it—and so neat!

A. WHITCOMB, Lawrence, Kas.—A well selected stock of bedding and greenhouse plants, presented in a catalogue which is a marvel of neatness.

J. C. WOOD & BROTHER, Fishkill, Dutchess Co., N. Y., offer a full catalogue of greenhouse, stove, and bedding plants, including the novelties of the season.

W. B. WOODRUFF, Westfield, Union Co., N. J.—In his catalogue of flower, bedding, and vegetable plants, has some useful talk about plants of various kinds.

WOOLSON & CO., Passaic, N. J., make a specialty of Hardy Herbaceous and Alpine Plants. Their catalogue adds to last year's list, those plants which have been tested, and the new ones that are now offered.

NURSERYMEN.

JAMES DONALDSON, executor of John Donaldson, will continue the business of the Kittanning Nurseries at Kittanning, Pa., with floriculture stock in addition.

ROBERT DOUGLAS & SONS, Waukegan, Ill., make a specialty of evergreen and ornamental tree seedlings, which they raise by the million.

FERRIS, MINARD & CO., Poughkeepsie, N. Y., offer, besides a general stock of trees, a large list of small fruits.

C. A. GREEN, Clifton, Monroe Co., N. Y., makes favorable terms for small fruits of all kinds.

E. W. HARRINGTON, Palmyra, Wayne Co., N. Y., wholesale and retail lists and "Root Grafts for Beginners."

D. E. HOXIE, Northampton, Mass.—Catalogue of strawberries, grapes, and other small fruits, seed potatoes, etc.

C. W. KESLER, Bethany Church, Iredell Co., N. C., offers fruits of all kinds suited to the Southern States.

T. B. MINER, Linden, Union Co., N. J., sends a special list of seedling strawberries, his new grapes, etc.

E. MOODY & SONS, Lockport, N. Y. This, one of the oldest nurseries, offers "special rates by the car-load."

E. P. ROE, Cornwall-on-the-Hudson, Orange Co., N. Y., sends a chatty circular about new and old small fruits.

SHINN & CO., Niles, Alameda Co., Cal., a catalogue of trees, etc., suited to California, a large colored sheet, showing five varieties of the Japanese Persimmon.

C. M. SILVA & SON, Newcastle, Placer Co., Cal.—A general assortment of fruit and ornamental trees, adapted to California, including Japanese Persimmons.

B. F. TRANSOU & CO., Humboldt, Tenn., send their wholesale list, which includes a full assortment.

JOHN VAN LOON, New Amsterdam, La Crosse Co., Wis. With a general nursery stock, makes a specialty of small fruits, and offers them as premiums to those who subscribe to him for the *American Agriculturist*.

B. R. WESTCOTT, Richmond, Ind., is no new hand at the business, as he offers his 37th wholesale price list.

E. & J. C. WILLIAMS, Montclair, N. J., in their catalogue of small fruits in general, make a specialty of the "Duncan" strawberry and "Brighton" grape.

J. C. WOOD & BROTHER, Fishkill, N. Y., send a full and illustrated catalogue of fruit and ornamental trees, shrubs, and give good advice as to planting.

T. C. YEOMANS & SONS, Walworth, Wayne Co., N. Y., send a general catalogue, and give useful instruction in planting and pruning, with illustrations.

FOREIGN.

JOHN A. BRUCE & CO., Hamilton, Canada, are no novices, for we have their 27th annual catalogue, and a very creditable one it is. Yankee notions not excluded.

WILLIAM RENNIE, Toronto, Canada.—Its neat exterior of Scotch plaid, is borne out by the contents. Our Canadian neighbors are well served by their seedsman.

WILLIAM THOMPSON, Tavern St., Ipswich, England, is known to botanists as one of the few seedsman, not only in England, but everywhere, as being, while "in the trade," an accurate botanist. His supplementary catalogue for 1878, contains many rare American seeds.

FARM IMPLEMENTS, MACHINERY, FERTILIZERS.

BELCHER & TAYLOR AGRICULTURAL TOOL CO., Chicopee Falls, Mass., offer a great variety of farm implements, and among them excellent feed cutters, plows, cultivators, and notably a hand-power threshing machine.

WM. L. BOYER & BRO., 2101 Germantown Ave., Philadelphia, Pa., describe their Union Railway Horse Power and Farm Grist Mill in a special circular.

CHICAGO SCRAPER & DITCHER CO., No. 34 Metropolitan Block, Chicago, Ill. The use of their Scraper and Ditcher is illustrated with great fullness, and their recently introduced "Screw Harrow" presents a novelty in the way of implements, of which we hope soon to know more.

THE FARMER'S FRIEND MANUFACTURING CO., Dayton, Ohio, make the Farmer's Friend Grain Drill, which received the Centennial Grand Prize Medal and Diploma. The feeding apparatus of this drill is its prominent feature. It sows all sorts of seeds, with fertilizers if desired.

A. B. FARQUHAR, York, Penn., issue a handsome illustrated catalogue of their wares, which include everything for use on the farm in the way of tools, etc. The

specialties are steam threshers and separators, the Farmer's Favorite Grain Drill, and harvesting machines.

FRICK & CO., Waynesboro, Pa., describe their Eclipse Steam Engine, which they offer in both portable and stationary, and combined portable and stationary shapes. They also make a grain separator, cleaner, and bagger.

A. W. GRAY & SONS, Middletown Springs, Vt., illustrate the merits of their one, two, and three Horse Powers, with their various machines for sawing wood.

THE MAPES FORMULA & PERUVIAN GUANO CO., No. 158 Front St., N. Y., are making a literature of their own. Their recent circulars give a great amount of information, and will be of interest to all who use fertilizers.

G. WESTINGHOUSE & CO., Schenectady, N. Y., give full particulars of their Separators and Threshers, with the horse and steam powers for driving them.

MISCELLANEOUS.

AMERICAN DRIER CO., Chambersburg, Pa.—A simple apparatus for drying fruits, vegetables, etc.

BAUSCH & LOMB OPTICAL COMPANY, No. 37 Maiden Lane, N. Y., and Rochester, N. Y., who have supplied the *American Agriculturist* with more microscopes than were ever before made for one order, send a catalogue of Compound Microscopes and other optical instruments.

J. S. BIRCH & CO., No. 38 Dey St., N. Y.—Self-adjusting Watch Keys, Alarm Clocks, and other useful things.

CHADBORN COLDWELL MANUFACTURING CO., Newburgh, N. Y., make the widely known "Excelsior Lawn Mowers." They have done two good things, reduced the prices and diminished the weight of their mowers, which now go to Europe at the rate of over 1,000 yearly.

CLEVELAND NON-EXPLOSIVE LAMP CO., No. 42 Barclay St., New York, and Cleveland, O., send an illustrated catalogue. Their Library Lamp was noticed last month.

EVERETT & SMALL, No. 43 South Market St., Boston, Mass., are the sole makers of the "Matthew's Seed Drill," which they claim to be "the most perfect drill in use."

A. H. HEWES & CO., Cambridge, Mass., make illustrated flower pots, vases, & horticultural earthenware generally.

LAMB KNITTING MACHINE CO., Chicopee Falls, Mass., set forth the merits of the "Tuttle" Family Knitter.

T. H. McALLISTER, No. 49 Nassau St., New York, besides his general optical catalogue, issues one especially devoted to telescopes, spyglasses, and their uses.

MASSACHUSETTS ARMS CO., Chicopee Falls, Mass.—"The Maynard Rifle," and everything thereto appertaining.

E. RUHLMAN, Lockport, N. Y., claims that his "Hand-Cultivator, or Wheel-Hoe," is the best in use.

J. C. STRIBLING, Pendleton, R. I., makes the "Dixie Fruit Picker."

TREVOR & CO., Lockport, N. Y., make wooden labels of every size.

WILSON & HOWELL, Whippany, N. J., make Moore's Patent Duster for distributing Paris Green. It looks efficient, and we shall try it when there are any "bugs."

Bee Notes for March.

BY L. C. ROOT, MOHAWK, N. Y.

Let bees, out of doors, be left undisturbed, unless necessary to examine occasionally to see that the entrance does not become stopped by snow, ice, or dead bees. This sometimes takes place after a cold spell of weather, when the frost on the inside of the hive, accumulated from the breath of the bees, melts, runs down to the bottom, and there freezes. Those wintering in-doors should be left as entirely undisturbed as possible.

Bees and Grapes.

Mr. Jos. Lesley, of Montgomery Co., Pa., writes, "can you put me in the way of finding out what are the odors that are disliked by bees. I have fine grapes, and desire to eat them, but my neighbor's bees are always before me, so that I get about 20 per cent only of the yield."—If beekeepers are conscientious and honest persons, this is a question of even more importance to them than to those who cultivate grapes. It is a topic which has long been discussed. That many kinds of grapes will, from different causes, become cracked or broken, while yet hanging on the vines, is well known to grape growers. When the skin, from any cause, becomes broken, it is undeniable that, if honey be scarce, bees will suck out the juices. But the inference from the above inquiry is, that the bees attack and destroy sound grapes.

That wasps and hornets are capable of puncturing the skin of the grape, is evident to any one who has ever seen a magnified illustration of the serrated jaws of these insects, while the jaws of the honey-bee, under the microscope, appear entirely different; they are smooth and apparently pliable. This fact must convince any one that it is a physical impossibility for a bee to bite the skin of any fruit. I could cite various authorities to prove this, some of whom were equally interested in both bees and grapes. I have myself tested the matter repeatedly, watching the bees day after day, when honey was not gathered from the usual sources, and have never known an instance where the bees injured a grape, when the skin was not first broken from some other cause. The year 1869 was the poorest season for honey ever known, not a pound of fall honey being gathered by many swarms. We had over 100 swarms of bees at our home apiary, and at the same place about one ton of grapes. If, from any cause, a grape, or any kind of fruit, became broken, the bees would at once appropriate it. Had it been possible for them to puncture the skin, they

would have destroyed the entire crop, Yet it was impossible to find them injuring sound fruit. The late Mr. Quinby was for years largely interested in both bees and grapes, and his experience corroborated this conclusion. That it may be an annoyance to grape growers to have their vineyards visited by our bees, only for the purposes admitted, I am well aware, and I would be very glad if I were able to offer any suggestion for mitigating the trouble. I can conceive of nothing that would be powerful enough to keep the bees away that would not be detrimental to the fruit. Intelligent horticulturists agree that the honey-bee is exceedingly useful, if not indispensable to plants, by the aid it renders in the fertilization of many flowers. It would be difficult to imagine what would be the consequence if bees should become extinct. It seems not too much to claim that the benefit they are in fertilizing flowers, more than counterbalance the occasional depredations of which we complain.

Weight of Swarms.

The amount of honey consumed by the four swarms of bees reported last month, during Jan., was as follows: No. 1, 1 1/4 lbs.; No. 2, 1 lb.; No. 3, 3/4 lbs. These were indoors. No. 4, which was out of doors, consumed 6 1/2 lbs.

A New Potato—Burbank's Seedling.

Mr. J. J. H. Gregory, of Marlhead, Mass., is not so exclusively devoted to the introduction of excellent squashes that he neglects "wisdom's old potato," for he has made known several varieties of what people call, when they wish to write prettily, that "esculent tuber." Mr. Gregory's latest introduction among potatoes is unfortunately named "Burbank's Seedling," which he knows, as well as we, will, should it attain the popularity he hopes for it, be known as the "Burbank," and nothing else. That remarkable potato, the "Early Rose," the introduction of which (even at \$5 the lb.) was one of the great events of the present century, not only in itself resuscitated potato culture, but it has been the parent of a numerous and useful progeny, among the latest of which comes the "Burbank," and asks for a place

transplanted the same, and found that he got good potatoes, and good sized ones, at the end of the first season; and if a seedling was not satisfactory then and at once, it probably never would be so. Mr. Burbank's experience sustained Mr. Breese's views, for the first year, from the seed-hall, the yield was 3 lbs. 3 ozs., of good sized potatoes. Mr. Gregory presents us testimony of large succeeding yields, and though we have not yet tried the "Burbank," we have such confidence in his judgment that we shall plant it, expecting large returns. If any one expects that the "Burbank," or any other variety, will give him large returns from starved land, he should not grow potatoes for a living.

Science Applied to Farming.—XXXIX.

More Scientific Experimenting by Farmers.—Practical Conclusions.—Plans for Experiments Next Season.

In one of the experiments with corn, described in the last article, on three plots where potash was not supplied, the crop failed, while on three other plots, in which it was added in different combinations, the yield was good, and was as large with the potash in the form of German potash salts alone, as where nitrogen and phosphoric acid were supplied with it. In another experiment, where sixteen plots were tested with as many different fertilizers, wherever phosphoric acid was omitted the crop failed, and wherever it was supplied the growth was good. The yield of corn rose and fell with the amount of phosphoric acid, and paid no apparent regard to the other materials. The inference then is, that in the first case, potash, and in the other, phosphoric acid, was the article of plant-food most needed.

Mr. Sage's experiment, the results of which are given in the table below, tells a still different story, and a very instructive one. The most striking feature is that the crop was a total failure in

every case except the two where complete fertilizers were used. Dried blood, superphosphate, potash salts, and plaster alone, each brought crops no larger, and, if anything, poorer in quality than where no fertilizer was applied. The mixture of dried blood and superphosphate, corresponding to a first class "ammoniated" superphosphate, did scarcely any better. In each case the crop was as

Mr. Sage says, "all refuse corn and hardly worth saving." But with the complete fertilizers, the yields were good. Hen manure, which furnished all the ingredients of plant food, brought about 40 bushels of shelled corn per acre. The mixture of dried blood, superphosphate, and potash salt, which cost at the rate of \$6.40 per acre, and furnished nitrogen, phosphoric acid, and potash, in probably larger quantities than the hen manure, brought 60 bushels of very fine shelled corn to the acre. "This," Mr. Sage says "was such a crop as I like to have. It grew well all summer, and the corn was very fine. The

stalks were large and green when the corn was ripe, and will make excellent fodder."

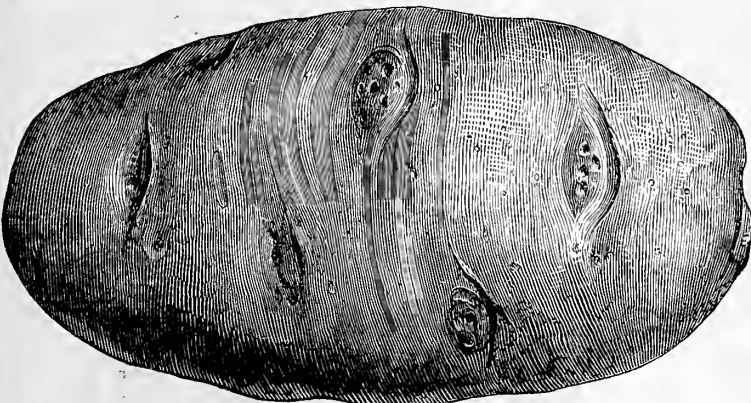
I am very sorry there is not space here to give accounts of a number of other experiments, whose results are extremely interesting and instructive. One, in particular, from Mr. Lufkin, of the "Maine State College of Agriculture and the Mechanic Arts," and one of the very best I have received, by the way, is full of instruction. Three crops, potatoes, beans, and rutabagas, were grown. To yield these crops, the soil evidently needed phosphoric acid most, and nitrogen next. Potash seemed to do scarcely any good. According to Mr. Lufkin's figures, the gain from the use of nitrogenous superphosphates on potatoes and rutabagas was from \$50 to \$80 per acre. With the other articles there was either a much smaller gain or a loss, which, in some cases, was very considerable. With beans there was a loss in every case except the one with superphosphate alone, which brought a small gain. This accords with what Mr. Lawes, of England, says, as the result of 30 years' experimenting with fertilizers, that "it is not advisable to sow artificial manures with beans, peas, tares, or other leguminous plants. Corn [i. e., grain] and root crops will take all the artificial manure which the farmer can afford to pay for."

One of the most sensible and prominent farmers in our State, in referring to his experiment last season, says something very much to the point: "After footing up the gains and losses on the different plots, it occurred to me to strike the balance of the experiment as a whole. Some of the fertilizers brought a large gain, others a heavy loss. Taking the whole together, the value of the increased yield was more than the cost, but the balance on the credit side was small. Now I think this is a fair epitome of the success a good many of us farmers have with commercial fertilizers. We know we must put more manure on our farms than they produce. We have got to do that, or go under. We use the fertilizers we find in the markets at random, without understanding how or why. Sometimes we gain, sometimes we lose. If we know what ones to buy, and when and where and how to use them, we may, harring the weather—which of course we can not control—he fairly sure of a good profit every time. I am persuaded that the way, and the only way, to learn what are the wants of our crops and soils, and the best means to meet them, is by studying them with such experiments as these. Mine has cost me a little trouble, and has given me a good deal of pleasure in return. I feel that I have learned what one of my fields, in its present condition, stands most in need of, and have made up my mind what to give it next season. Meanwhile, I propose to go on with this experimenting, and see how much more I can learn about my farm and crops."

In the next article I shall have something more to say about these experiments, and give plans and directions for making similar ones the coming season. Meanwhile I am very glad to say that the proprietors of the *American Agriculturist* have become so impressed with the usefulness of these experiments for farmers that, with their wonted public spirit, they have undertaken to do for their large circle of readers, what the Experiment Station did for a limited number of persons last year, to wit, supply the materials of attested quality, and with full explanations and directions for use. So, I presume, the number will be very considerable, and the results valuable.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.



BURBANK'S SEEDLING POTATO.

by the side of our now many valuable kinds. The form of the "Burbank" is shown in the engraving; it is of medium size, running remarkably uniform in this respect; medium as to season, excellent as to quality, whether boiled or baked, but its most prominent character is its abundant yield. Not long ago, it used to be thought that a potato from the seed must be cultivated for four or five years before its full size was reached, and its qualities known. But the excellent Mr. Breese, of "Early Rose" fame, changed all this. He sowed the seed from the seed-ball as he would tomato-seed; and

EXPERIMENT WITH CORN, BY CHESTER SAGE, MIDDLETOWN, CONN.

Soil: Heavy loam, very poor, hard pan subsoil. Previous treatment: 1874 manured with blood guano [slaughterhouse refuse], 300 lbs. per acre; crop, oats, 15 bushels per acre; 1875, no manure, hay, 3/4 ton; 1876, no manure, hay, 1/2 ton. Size of each plot, one row (79 hills, 3 ft. 9 in. apart), 18 rods long, making about 4 square rods area. Amounts of fertilizers: 800 lbs. per acre, except hen manure handful to each hill. Fertilizers applied in the hill, mixed well with the soil and covered with earth before dropping the corn. Plowed May 9. Planted May 16. Cultivated both ways and hoed three times. Harvested Oct. 15. Yield: Corn in the ear, measured in a bushel basket, as below.

No.	Fertilizer.	Valuable Ingredients.	APPEARANCE OF CROP.			YIELD, CORN IN EAR.	
			Stalks.	Ears.	Kernels.	Per Plot.	Per Acre.
1	Dried Blood I.	Nitrogen. Phosphoric Acid. Potash.	Poor, 3 ft. high.	Small, not filled.	Small, imperfect, dull color, bitter taste, mouldy.	1/2 bushel.	20 bushels.
2	Superphosphate II.		Small, poor.	Small, better filled.	As 1, except less bitter and not mouldy.	1 bushel.	40 bushels.
3	Potash Salt III.	Potash.	Small, poor.	Same as 1.	As 1, but not mouldy.	3/8 bushel.	20 bushels.
4	Mixture I+II.		Small, poor.	Same as 1.	As 1, but not mouldy.	3/8 bushel.	20 bushels.
5	Mixture I+II+III.	Plaster.	Large, fine, green.	Large, long, well filled.	Large, bright, sound, sweet, very fine.	3 bushels.	120 bushels.
6	Plaster.		Small, 2 ft. high.	Small, not filled.	Poorer than 1.	1 bushel.	40 bushels.
7	Nothing.	Hen Manure.		Very poor, but better than 1, 2, 3, and 4.		1/2 bushel.	20 bushels.
8	Hen Manure.					2 bushels.	80 bushels.

Very good, but stalks smaller, ears shorter, kernels smaller, and yield less than 5.

A Cottage, Costing \$250.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan was designed for a simple cottage, with sufficient accommodations for beginners in house-keeping with limited means. It is arranged as the Wing of a larger house to be erected in the future, as indicated in the dotted sketch adjoining ground plan. (The building, with the proposed enlargements complete, will be given in a subsequent number of the *American Agriculturist*.) To a certain extent one's dwelling is an index of his character. Any effort at building expresses the owner's ability, taste, and purpose. Every industrious man, starting in life, has a right, and should be encouraged, to anticipate prosperity, as the sure reward of honest worth; and he may, with propriety, give emphasis to such anticipations in every step, and with every blow struck. His dwelling may well express the progressive character, rather than a conclusive result. Beginning a home by starting with a room or two, as present means will allow, and increasing its dimensions as can be afforded, without the precarious aid of the money-lender, is honest, independent, and best provides against the ever-changing vicissitudes of life. The first step towards building consists in the preparation of plans. These should be sufficiently comprehensive to embrace all probable requirements. If only a small beginning is intended, it should be made to exhibit some degree of completeness, and be arranged to conform with the proposed future enlargements without serious alterations....

Exterior, (fig. 1).—In view of the relation this structure is to bear to a proposed main house, and to allow for the grading likely to be required in the ultimate completion of the whole, the foundation is made to show four feet above the ground. Such elevation adds to the prominence and good appearance of the building, and relieves the interior from the dampness likely to result from a closer contact with the soil. The style is simple, neat, and favorable for the using of ordinary materials and methods of construction.

....



Fig. 2.—INTERIOR OF COTTAGE.

Construction.—For economy, and in prospect of a future enlargement that shall include ample cellars, such excavations are omitted for this building.

The Foundations are brick piers, extending below the reach of frost, and 4 feet above, and the spaces between them are close-boarded with sheathing, making an inclosure useful for many purposes. If desired, a sort of temporary cellar may be made, by deepening the central portion of this inclosure a foot or two, and banking the loose earth against

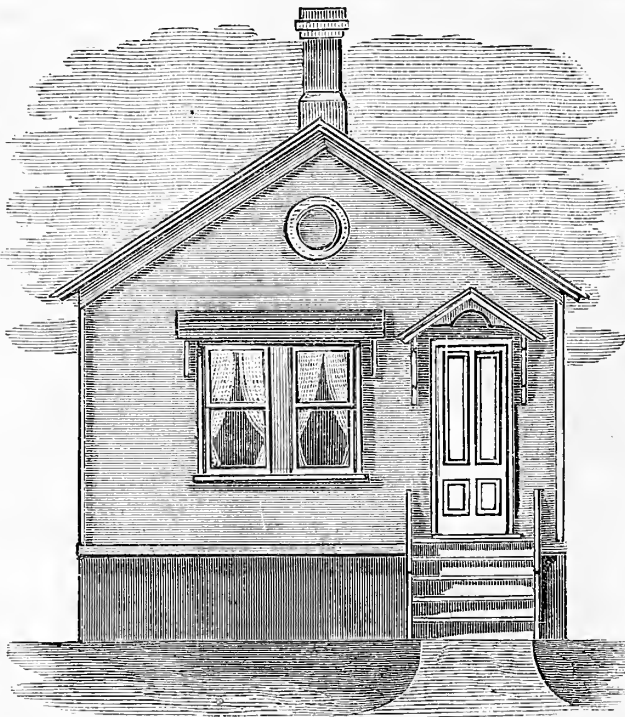


Fig. 1.—EXTERIOR OF COTTAGE.

the inside of the boarding. The Framework and other parts are substantially constructed, of materials as indicated in the appended estimate. The Chimney rests on the central pier of the foundation, (which is strengthened by the central pier of the foundation), and has two flues, with metal thimbles in the bottom of each—one to receive the stove-pipe from the Living-Room, and the other to serve as a ventilator for the Bed-room. All of the materials are intended to be of merchantable quality. The siding, flooring, and casings, are mill dressed. The sizes of the sash are 2 ft. 8 in. by 5 ft. 2 in., and of the doors, 2 ft. 8 in. by 6 ft. 8 in., all 1 1/4 in. thick, and may be found ready-made, and seasoned, in the stock of any regular dealer.... In the following estimate, the item of \$20, for carpenter's labor, may seem very little. This amount is allowed for preparing the building ready for the plasterer, and is entered in this manner for convenience in making the calculations. Adding to the above amount the cost of such labor in the "completed" parts, will make a total of \$50.

Estimate, cost of materials and labor:

1000 bricks, laid, at \$12 per M.	\$12.00
124 yards plastering, at 20 cents per yard.	24.80
630 feet of timber, at \$15 per M.	9.50
2 sills, 4x6 in. 18 feet long.	1 girder, 4x6 in. 18 feet long.
2 sills, 4x6 in. 16 feet long.	9 beams, 3x6 in. 16 feet long.
4 posts, 4x6 in. 10 ft. long.	14 ceiling bds., 2x4 in. 16 ft.
75 wall strips, 2x4x13, at 11c. each.	8.25
98 siding, 9 1/2 inches, at 25c. each.	24.50
Cornice materials	5.00
50 shingling lath, at 5c. each.	2.50
12 bunches shingles, at \$1.25 per bunch.	15.00
36 flooring, 9 1/4 in., at 25c.	9.00
7 windows, (complete), at \$6.	42.00
4 doors, (complete), at \$5.	20.00
2 stoops and closets, (complete)	20.00
Nails, \$4; painting, \$14; carting, \$5.	23.00
Carpenter's labor, (not included above)	20.00
Incidentals	12.25
Total Cost.	\$250.00

A Machine for Planting Potatoes.

We have heretofore referred to a potato-planter, which cuts the seed, opens a furrow, drops the sets, scatters any dry fertilizer in the furrow, and covers seed and fertilizer—all at one operation. This machine is True's Potato Planter, which we here illustrate by engravings. It is no new invention, but has been in use by a large number of extensive potato growers for some years. It was exhibited at the Centennial, where it attracted the notice of the English Judge of agricultural machinery, who procured several machines for himself and his friends. The value of a really effective machine, which will plant six acres of potatoes in one day, doing the whole work completely, and as well as, if not better than, it can be done by hand, is obvious. That this machine is thus effective, we are well assured, and though we have not yet tried it in the field,

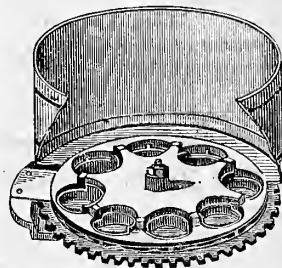


Fig. 2.—BOTTOM OF HOPPER.

we propose to do so the coming season. The general view of the machine is given at figure 1. It consists of a two-wheeled frame, upon which is a hopper for the seed potatoes, another hopper in front of this is for the fertilizer; a plow, through the standard of which the cut sets drop into the furrow, which it opens, and a pair of scrapers in the rear, by which the furrow is closed, and the sets are covered. In the bottom of the hopper are a series of revolving holes, into which the potatoes drop, and as they are carried around upon a stationary floor, they are thrust against a blade, which slices off a piece sufficiently large for a set. This arrangement is shown at figure 2. The operation is certain and even, and the only thing which can interfere with it, is the presence of a potato too large to drop into the holes. This is provided against by taking care to break any large potato, or to remove

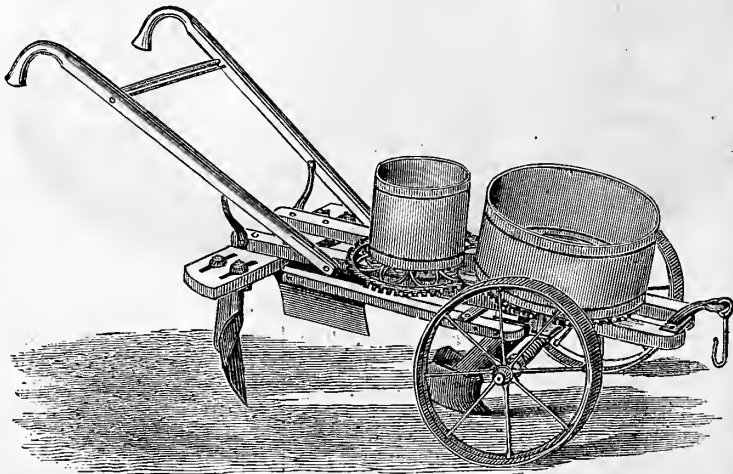


Fig. 1.—TRUE'S POTATO PLANTER.

any very large ones. Different sets of holes are furnished, to be used with potatoes of various sizes, from very small ones, up to those of average bulk. The machine is drawn by one horse, and the wheel-mark is intended to be a guide for planting each succeeding row. It is made under the supervision of the inventor, Mr. J. L. True, by Messrs. Nash & Brother, of 7 College Place, New York.

THE NORTH-WESTERN DAIRYMEN'S ASSOCIATION met at Chicago, Dec. 11, and following days. Various papers on interesting subjects were read, such as "Chemical fertilizers, their uses and application"; "Barn-yard manure, its value, and how applied"; "The best varieties of grasses for hay and pasture," and similar topics. Dr. Jos. Tefft, of Elgin, Ill., was elected President, and William Patten, of DeKalb Co., Ill., Secretary.

The Hare-Indian Dog.—(*Canis familiaris*.)

The dog represented upon this page will be readily recognized as a relative of the so-called Esquimaux dog. The similarity in form and feature between the dogs inhabiting the arctic countries, and which are classed under the general term Esquimaux, and the wolf of that northern region, is so close that naturalists consider the dog to be descended from the wolf. It is known that the dogs have bred with the wolves, and the half-bred animals have been tamed and domesticated. In general, the dogs of the different varieties known as Esquimaux, have gained little or nothing over their wild ancestors by their entrance into domestication and servitude. Starved, for the greater portion of the year, and kept so hungry that they occasionally attack and consume each other, they are at other times but barely half fed that they may work in the hardest manner in drawing the sledges of their savage masters. They are at the same time so cruelly used and beaten, when forced by the pangs of hunger, they neglect their work to help themselves by stealth to the scanty provisions laid up for the use of their owners, that they evince none of the kindness of disposition or affection for their keepers shown by dogs of other races; but on occasions when made furious by severe torture, they turn upon their tormentors, and unless driven off, would soon rend them to pieces, and devour them.

The dogs of the Hare Indians, while they closely resemble their wilder relatives in some respects, are rendered less savage by better treatment and relief from degrading labor. These Indians inhabit the region around the Great Bear Lake and the Mackenzie River in North America; and while the Esquimaux dog is found throughout the whole of the Arctic Zone, this variety inhabits only the American portion of it, and is confined to the possession of the Indians mentioned, and one or two other neighboring tribes. The dog has a mild countenance; a small head; slender muzzle; erect stout ears; the oblique eyes of the wilder races; slender legs; a broad hairy foot, and a hushy tail which it generally carries curled over its right hip, as is done by the true Esquimaux. Its fur is long, especially upon the shoulders; and beneath it, all over the body, and even upon the tail, there is a coat of thick wool. The hair upon the top of the head is long, and upon the cheek is not only long but turns backwards, giving the appearance of a

ruff or collar around the throat. The face, muzzle, belly, and legs, are white, and a white line passes over the crown of the head. The ears are white in front, and fawn-color behind. The end of the nose, eye-lashes, roof of the mouth, and parts of the gums, are black. The back and sides are grey, or



DOG OF THE HARE INDIANS.

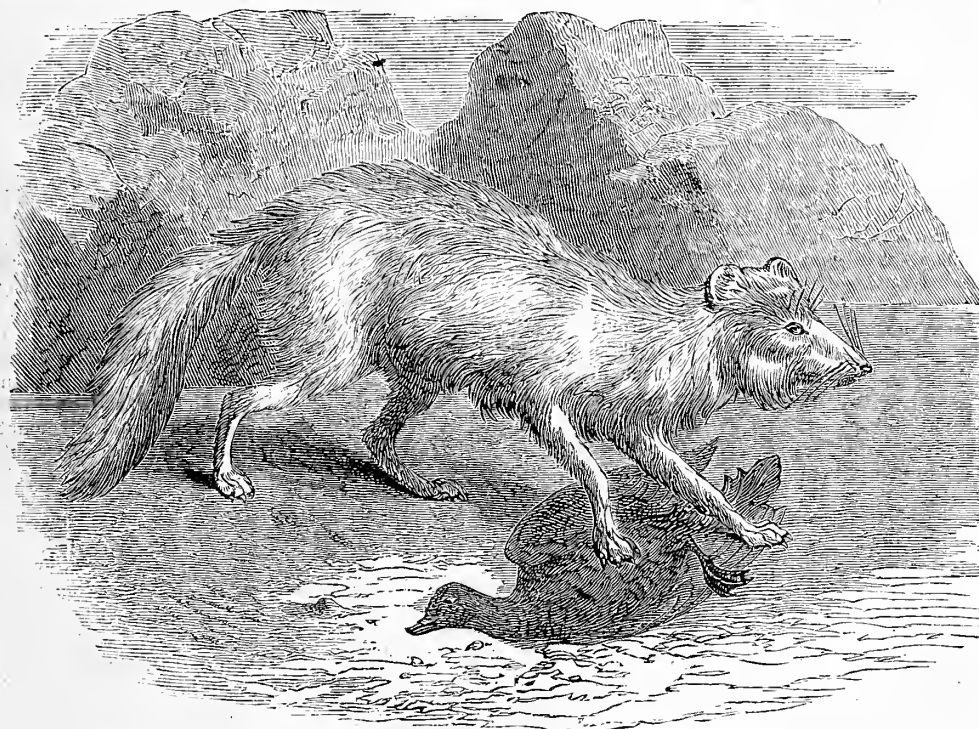
lead-color, mixed with fawn and white, not in patches, but shaded into each other; the hushy tail is white beneath and at the tip. The feet are covered with long hair, which conceals the claws. The soles are partially covered with hair, but there are naked protuberant callosities even in the winter time upon the soles, as there are in all the northern species of dogs and wolves. The ears are somewhat nearer to each other than in the true Esquimaux dogs. This race is used only for hunting,

The Blue Arctic Fox.—(*Vulpes Lagopus*.)

One of the most valuable of the different species of foxes, considering the fur as the measure of the value, is the Arctic fox.

This animal is eagerly hunted all through the Arctic regions, and is in great repute on account of its beautifully silky fur. This is perfectly white in the winter, at which season it has the greatest value in the hunter's estimation; at other times it becomes of a bluish leaden-grey color, whence the animal takes one of its names. It is called the White Fox, the Blue Fox, and the Stone Fox. When the fur has a peculiar bluish-grey tint, it is valued nearly as highly as when white, so that it is hunted at all seasons, excepting at the time when the coat is changing. It inhabits both the Asiatic and American Arctic countries, but the largest numbers of skins are procured in America by the hunters of the Hudson Bay Company, at whose annual sales, in London, the fur brings very high prices, sometimes surpassing a hundred dollars for a single skin. It is rarely that more than a hundred skins are sold at one of these sales, and frequently the number is much less than that. As is peculiar to some kinds of foxes, the soles of the feet of this species are thickly covered with hair, from which it gets the name *Lagopus*, or "hairy-footed." It subsists upon birds, and exhibits great cunning in the capture of its prey. It possesses the power of imitating the cries of

birds, and by this deceit is enabled to entice them to destruction. While it is thus remarkably acute in providing itself with food, yet it has not the suspicious wariness which renders other species of foxes so difficult of capture, and so successful in eluding danger and baffling pursuit. It is easily enticed into traps, and will generally permit a hunter to approach within easy range of a shot-gun. It is not that it is so sparsely scattered over its barren hunting grounds, and that its food were not equally sparsely supplied, it would become so easy a prey, that it would be in danger of early extermination. It lives in burrows which it excavates in the ground during the summer months, and is sociable in its habits,



THE BLUE ARCTIC FOX.

and as may be reasonably supposed, their occupation tends to develop finer and higher instincts, greater courage, and altogether a better and gentler disposition towards their owners, than exists in the wholly brutal and savage Esquimaux dog, made so, no doubt, by cruel treatment and hard labor.

the burrows being formed in groups of twenty or thirty in one locality. When alarmed at the approach of a human being, or other enemy, it retires to its burrow, but from curiosity or for some other reason, it continually protrudes its head and yelps at its disturber, so that its retreat

is of little avail in securing its safety. The Blue Arctic Fox is smaller than our common Red Fox, it rarely surpassing eight pounds in weight, and being no more than three feet in total length. It possesses a very bright and intelligent eye, of a hazel color, and its features generally are devoid of that sly cunning which characterizes the fox with which we are all so well acquainted, and from which we take such pains to guard our poultry houses.

Among the Farmers.—No. 26.

BY ONE OF THEM.

Horse Experience.

The friend who sent to my pasture the Arabian mare which he picked up at an auction sale in New York for a song, bought a mare with foal at foot last spring. Pretty soon he found that the mare was probably hopelessly lame, and the foal looked like a cripple, though lively enough, and not lame. One hind fetlock joint was much bent, so that it traveled on the outside of the hoof only. It was a severe tax upon the mare to make the journey of 18 miles to my farm, even after a rest of a week at a good stable. When there, the wisacres were all at a loss to know what and where the difficulty was. Some said it was a dislocation of the shoulder from a fall; others, an inflammation of the shoulder joint; others, that it was in the foot. The fact was, she bore no weight upon the off fore-foot, hardly allowing it to rest its own weight upon the ground. Of course the shoulder was all drawn up, and looked swollen. The hoof did not feel hot—at least, not very hot. She was a big coarse creature, awkward, and ungainly, but feeding well and giving a plenty of milk. The foal was large and thrifty, and its crooked leg was rapidly getting straighter. It was some time before we found out that the ailment from which the mare suffered was

Navicular Disease.

This it clearly was, for when, after a while, she began to bear any weight upon the foot, she "pointed,"—that is, she touched her toe only to the ground. She gradually improved, so that she walked, but stumbled greatly, and limped badly when forced to trot. Her shoes were pulled off, and she was left to wander in wood pastures, and pretty much where she liked, for she was not worth stealing. She was bred to a good large horse—handsome and stylish, with fine action, great spirit, and a natural fast trotter. He is just her opposite in every respect, except having a good road gait, and good size. After two months' rest we were rather surprised to find that her lameness had nearly gone. It now recurs occasionally and slightly. She is a very serviceable animal, and will take a family "Rock-away," with four people in it, up hill and down for hours, at a gait of ten miles an hour, with little show of fatigue, "going for" every hill as if it were a pleasure to trot up it. The diseased foot is smaller than the other; that is always the case with *navicularis*. It is now growing wider at the heel, however, and the evidence of former fever, in the constricted band which shows as a deep depression all around the hoof, is at once evidence that the diagnosis was correct, and that health is measurably restored. After it became evident that she would be able to do farm work, I proposed to my friend to keep and use her a year for her next foal. To this he consented, and it has opened my eyes to

The Pleasure of Driving a Big Horse.

"Mollie McGuire," as we call her, is 16½ hands high, I suppose; perfectly willing to pull, and so powerful that no ordinary load taxes her strength. She is a fair roadster, too; perfectly docile and easy to drive, but inclined to stumble. Once she turned a summerset in the shafts. She "brought up" on her back, with all her feet and her head under the forward axle, unable to breathe, and yet refraining from struggling, as if falling down in the shafts had been the daily experience of her life. I suppose it took about one minute, but it seemed an hour, before we could run the wagon back, unbuckle reins and the throat-latch, and give the poor thing a chance to draw her breath, and get up. This is a

digression. Heretofore I have always driven rather small horses—say those weighing 900 to 1,050 lbs. "Mollie" weighs 1,300 to 1,300, and is all bone and muscle. I would not have believed it possible that so great a difference in the ease of motion would be perceptible to one in the wagon, when drawn at just the same speed. "Mollie" swings along as easily as if she had force in reserve for ten times the labor; while our 900 lbs. Kanuck, who is as willing as possible, and will haul a ton of coal up from the station alone, if the roads are good, is just a little, but constantly, irregular in his gait according to the road, whether it is sandy or deep with mud, level or slightly undulating. It is a great satisfaction to feel as if your horse's strength and willingness could hardly be overtasked, and I am satisfied that for country use one good big horse is more useful than a pair of small ones; and on the road is quite as pleasant to drive.

Rest as a Cure-all for Horses.

Two years ago I had a mare go lame with a spavin. She was worked a good deal until about a year ago, since which time she has had profound rest, and meanwhile has given me an Orloff foal. She had been blistered and treated more or less, but grew worse. Now she does not go lame at all. "Mollie's" *navicularis* was certainly cured by rest, and I have repeatedly known old cripples turned into the woods to die, pick up and come out, if not sound, yet valuable for years afterwards. Nature is the best physician, almost every time, for the common ills of our domestic animals, and so far as horses are concerned, particularly as affecting ills of their locomotive system, we cooperate best with Nature when we give them rest. There are, however, cases when medicine, the knife, and the burning-iron are necessary, and must be speedily resorted to, or it will be too late. If we call a veterinarian, it is more likely than not that he will feel constrained to do something or give something in order to satisfy us, when, if he could do exactly what he thought was best, without reference to what he thinks our wishes may be, he would try the "let alone practice."

Weaning a Foal.

The books indicate that it is an easy matter to wean a foal, and very little is said about it. One of my mares had an abundance of milk, the other was not properly treated before foaling, and to that I attribute the fact that she gave a small quantity. She foaled after having been only a week or ten days at pasture, and both she and the colt suffered, as I suppose, from the relaxing effect of the change of diet, which occurred just when she most needed her strength and vigor. When the foal of the other mare was seven months old, we weaned it, and learned two or three interesting facts. One is, that it would not have been difficult to take one foal away and give the mare another, for she allowed the one not her own to suck repeatedly, her own being absent. I have frequently regretted not having put the little colt with the big mare at that time for a permanency. This mare gave what struck me as an enormous quantity of milk. The foal was removed at about 9 o'clock; by noon, her udder seeming much distended, it was milked out, and nearly two quarts of milk were obtained. It was not measured, so we may fairly say it amounted to three pints. In about three hours it was full again, and a similar quantity was drawn. This seemed to be all that the udder would contain, and about the time required to secrete it. At this rate the mare was giving twelve quarts of milk a day, and very likely more, for the almost constant draft which a foal makes is a constant stimulant to milk secretion. The European goat-milkers, who drive their little flocks from door to door, and milk them as they sell the milk, draining them of the last drop many times in a day, get a great deal more milk than if the goats were milked but twice a day. We found that the mare above alluded to would get along without being milked, except when she was wanted for work, when it was of course best and most humane to empty her udder. It, however, was next to impossible to keep her away from her foal, or the foal away from her, if both were free and within sound of each others calls. The mare would manage to break-down almost any fence, and the foal would

leap almost any fence on the farm, so one of them had to be stabled all the time for nearly two months.

Green Manure Crops.

Cheap and good manure is getting to be more and more important every year. We are finding it harder to buy manure, and more difficult to get concentrated fertilizers that are to be depended upon. Nevertheless, farmers make little use of green manure crops. It is hard to change old practices sufficiently to plow under a good crop of clover or even of buckwheat. I have a very poor opinion of buckwheat as green manure. Rye is much better, and one can plow that under early enough to sow something else, to be either harvested or plowed under as the case may be. For instance, I witnessed the following successful treatment of a rough, stony, poor, gravelly lot, and hope to be able to carry out something quite similar myself this year: An old neglected lot, five acres of which would hardly pasture a sheep, was plowed and sowed with rye, which wintered well. A good many stones were picked off, and about the first of June, when the rye was heading well, it was rolled down and plowed under. Stones were partially picked off again—that is, the larger ones were—and about the first of July buckwheat was put in. Of this a good crop was harvested, and the straw, with a little addition of some other light manure, was spread back, and rye was sowed again in the autumn. This gave another opportunity to pick off the stones, and the result was that when the rye was a second time plowed under, the quality of the soil was so good that corn was planted with fertilizer in the hill. Of this a very fair crop was secured, and other farm crops followed. Now if cow-peas could have been sowed at the last hoeing of the corn, they would doubtless have covered the ground well. Then they might have been plowed under just before frost—as soon as the corn could be cut up and removed; then wheat or rye might have been sowed.

Light, poor land, really needs a growing crop to cover the soil all the time. Rye offers several advantages over other crops. It occupies the soil from October to June—eight months—during which time, when the ground is not frozen, the roots are absorbing nutriment and growing, so that when the warmth of spring comes the plant makes most rapidly the astonishing growth with which we are all familiar. It is a very certain crop, not being liable to winter kill. Besides, it is cheap, the seed costing seldom over \$1.50 per acre.

Red Clover is no crop wherewith to manure poor land, though one of the best for land in good heart. It must, however, occupy the land fully a year, but after a good crop has been plowed under and the land limed, almost any crop may follow.

Feeding off before Plowing.

We raise few green crops which may not be fed off with sheep before they are plowed under. Turnips, rye, clover, and cow-peas may thus be treated, often most advantageously. The difficulty I find is that I do not and can not well keep sheep. Feeding off with other stock is not so satisfactory. The manure is less evenly distributed, and the crop is less consumed than trodden down. It is important to save labor, and the advantage of green manuring is that all that great amount of labor in harvesting, curing, storing, feeding out the crops, and finally carting out the manure and spreading it, is saved. The actual value of any crop as manure is never so great as when it is plowed under just at the right time. When it is fed, we gain perhaps in other ways, but we lose in manure. This loss must be made up by the use of leaves, mold, muck, swamp hay, or other articles really foreign to the farm, or at least foreign to the arable land of the farm.

In the vicinity of a large city, or of any locality where many horses are used, no branch of farming is more profitable than

Taking Horses to Board.

The price of board varies greatly, but it is never less than the value of the hay and grain actually consumed, estimated at the full market price. When one can get all the horses he can accommodate, and has room for a goodly number, his fortune as a farmer—a very moderate fortune—may be

said to be made. There is always considerable competition, for every one likes to have his yard well filled with good manure in the spring, and yet with few horses and cows, and a diligent use of absorbents, that is, of leaves from the woods, muck from the swamp, sods, and such things, the manure heap will increase just about as fast, with no more labor or responsibility. Of course with more "help" we might board horses and cart muck and leaves too, and so have our muck and manure heap grow in proportion to the number of horses and cattle stabled, but I notice that that is not the result generally seen. The stipulation in regard to boarding horses usually is that they shall have all the good hay they will eat, and towards spring a certain quantity of oats daily is ordered in addition. Boarding horses thus get in the way of nosing over a good deal of hay, which is wasted, for as they lose their relish for dry hay, they pick out the nicer sorts, and refuse the rest. Our own horses are fed more economically, when they have cut hay with bran and corn-and-oat feed, with only such dry hay as they will eat clean, and it would, I think, be better for both the farmer and for the horse owner, if the stipulation were that the horse should be kept in good flesh or gaining weight from November to May, leaving the farmer to feed hay, grain, or roots, as he could do most economically.

Talks on Farm Crops.—No. 13.

By the Author of "Walks and Talks on the Farm,"

"Harris on the Pig," etc.

Mr. Calvin Chamberlin, of Maine, writes: "I have been a reader of the *American Agriculturist* for several years. Your article in January is of special interest, as I have given much time and thought to the matter of forage plants, as substitutes for pasturage and hay. I am situated at a thriving village, and supply some of our neighbors with good milk. I moved from a 200-acre farm in 1852, to my present place, then 20 acres—nearly one-half of which was covered with the original forest. I started a nursery of apple-trees as a leading business; but at the end of a few years was glad to put the land to better use. I then got some Jersey stock, beginning with grade heifers and a thoroughbred bull. I have since owned two other full-blood bulls, and kept each of the three two years. I have raised and sold several very fine cows, and have usually four cows in milk. My original 20 acres has been changed by cutting off about one-half the wood-lot, leaving a belt on the north and west for a wind-break; and I have given four acres for the way of a railroad, and a site for a spool-factory.

"With my present available land,—not over ten acres, for all purposes of pasture, meadow, tillage, orchard, and garden,—and keeping a horse, and generally a bull, and raising heifers, and finding a good account in the Jersey cows, you can understand how it is that I am interested in a well-presented article on a forage-crop. I have usually brought home some hay from out-lying lands a few miles away; but for the main dependence, I make the best use I can of these ten acres. I have grown very heavy clover by using stable manure, wood ashes, and superphosphates. My last purchase of ashes was from the spool-factory—100 bbls., well packed, made from white birch, at 50 cts. per bbl. Alsike clover gives me as much weight of hay as does the largest red, and I think of more value. I have been through with all the usual experience with Hungarian Grass, Millet, and Western Corn, as fodder crops, and have settled on an *early sweet corn*. The cows and the horse have been consulted in their tastes while arriving at this result.

"I plant in rows about $\frac{3}{4}$ ft. distance, and hills $1\frac{1}{2}$ to 2 ft., with 5 to 8 stalks to the hill. Give flat tillage; hoe once or twice; use scarifier freely. The crop grown in this manner is as heavy as that grown in drills with more seed; and being more open to the sun, I imagine is more fully charged with the valuable elements. This mode of planting has the advantage of easier handling in the daily green rations; and the surplus of crop ma-

tures good ears, of which I usually have a few bbls. to be ground with the cobs, which goes well with the cows and calves in a mixture with cotton-seed meal. Besides the crop of potatoes, I grow some roots. Formerly I aimed to have 100 bushels of carrots to each cow wintered. I have now changed to mangel-wurzel and turnips."

"Mr. Chamberlin," said the Deacon, "seems to second your opinion that we are making a mistake in sowing the large varieties of Western and Southern corn for fodder, and that we ought rather to sow small-growing early kinds. I confess to have thought otherwise. Possibly, however, there is some truth in your idea."

"Depend upon it," said the Doctor, "it is one of the most important points in growing corn for fodder. The only objection that can be made to corn as a forage plant is that it is not nutritious enough. It is too bulky. I am not sure that you want an *early* variety. What is needed is a variety that produces small, fine, highly nutritious stalks, with an abundance of leaves. You do not want ears, but rich, soft, easily digested stalks, and it is not demonstrated that a variety of sweet corn is any better than a variety of other corn. Your stalks, last year, from a small early variety of common corn, were certainly sweet enough. Sugar is no more nutritious than starch, and as it ferments readily, there is great danger of its being lost from exposure to the rain in curing, or from fermentation."

"Mr. Chamberlain's method of planting," said I, "is a good one when the corn is to be cut up green for daily use in summer. But when it is sown on a large scale, to be cut with a reaper and tied into bundles to be cured for fodder in winter, I think my method of drilling it, thickly in rows, is better than planting it in hills. We have in this section a bean-planter that plants two rows at a time, 2 ft. 5 in. apart, and drops the seed in hills 12 or 15 inches apart in the rows. I have used this for fodder corn, dropping eight or ten kernels in a hill."

"And you had a grand crop," said the Deacon. "True," said I, "but no better than I have had since we drilled in a continuous row. The plan to adopt is the one which is the most convenient under the circumstances. The only thing that need be insisted on, is to sow it in rows wide enough apart to admit the free use of the horse-hoe or cultivator. Good crops are occasionally grown by drilling in the seed in rows seven inches apart, or by sowing broadcast, but they are the exception. A poor, sickly looking crop is the rule. For the best of 'Maize hay,' we want a small-growing variety, the richest and best land, and thorough culture."

But it is not an easy matter to convince a man that a "big crop" is not always the best. I was talking to-day with a farmer about barley. He was grumbling at the price. He raised the two-rowed kind, and could only get 56 cents per bushel. "You could have got 75 cents," said I, "for a choice sample of six-rowed barley."—"But you raise," he replied, "ten bushels more, per acre, of the two-rowed, than you can of the six-rowed."—"That may be sometimes the case," I replied, "but the crop which is the most easily raised is seldom the most profitable. You sow wheat after the barley, and it is reasonable to suppose that you would get better wheat after the smaller and earlier crop of six-rowed barley, than after the larger and late crop of two-rowed barley. It removes less plant-food from the soil. And at present prices, a crop of six-rowed would bring in more money than a crop of two-rowed. For instance, you have 50 bu. of two-rowed barley, per acre, and sell it for 56 cents per bushel, or \$28 per acre. If you had 40 bushels of six-rowed, and sell it at 75 cents, you would get \$30 per acre, and the cost of threshing, cleaning, and drawing to market is less on the 40 bushel crop of six-rowed, than on the 50 bushel crop of two-rowed. You get more money per acre, and the crop impoverishes the land less."

"You admit, then," he said, "that you can grow a larger crop of two-rowed than six-rowed."

"No, I do not. But it doubtless requires," said I, "richer land to produce a maximum crop of six-rowed than a maximum crop of two-rowed—just as it requires richer land to produce a maximum crop of early Kent peas, than a maximum crop of Mar-

rowfats. The early, short-strawed, six-rowed barley, requires richer and better land than the later and longer strawed two-rowed kind. To grow choice, heavy six-rowed barley, you require well-drained, rich, clean, mellow land, and these requisites being provided, there is no crop which, in proportion to the labor, and taking one year with another, affords a better profit."

"Farmers will not sow much barley this year," said the Deacon, "spring wheat and oats pay better at present prices."

"If so," said I, "those farmers who have good land, well adapted to the crop, had better stick to barley. A short crop means a good price and larger profits. But the main thing is to make the land rich, warm, and mellow, and to sow early. We are getting commercial manures at comparatively reasonable rates, and they will pay as well on barley as on any other ordinary farm crop. If we cannot afford to use them on the whole field, there are usually some light, sandy knolls, or poor spots in the field, where a little artificial manure would make all the difference between a good crop and a bad one. There are sandy knolls on my farm that will not produce 8 bushels of barley per acre without manure, but when a dressing of manure is given, will give a crop of 48 bushels per acre. And you must recollect that I am *obliged* to spend precisely as much labor and money in plowing, harrowing, rolling, sowing, cutting, and raking these poor portions, as those producing a good crop."

"On these poor sandy knolls," said the Doctor, "I should have more faith in some well-rotted barn-yard manure, than in artificials."

"Perhaps so," said I, "and in fact we are to-day drawing out some 'scrapings' from the barn-yard, and spreading them on the poorer, sandy portions of the field where we intend sowing barley. I have done this for several years with great advantage. But if you can not do this, then try some artificial manure. I should prefer equal parts nitrate of soda and superphosphate, unless I could find some manure that would afford soluble phosphoric acid and available nitrogen at less cost."

"If you have a good sod to plow under for corn," said the Deacon, "and after the corn is harvested can plow the land in the fall, the decayed sod will be brought to the surface, and if the land is not too heavy, you can sow the barley in the spring without again plowing. The sod will be where the roots of the barley can get hold of it, and it will be equal to a good dressing of manure. And besides this, the sods keep the ground loose and mellow, which is what is wanted for success in growing barley."

"A little artificial manure," said the Doctor, "sown in the spring, and mixed with this decaying sod, will be a great help. The nitrogen and phosphoric acid of the fertilizer will make this sod equal to the richest and best manure. It is good in itself, but you will not get the full benefit from it without a little addition of nitrogen and phosphoric acid."

"The Doctor is right," said I, "and the only question is, whether we can buy the nitrogen and phosphoric acid cheap enough. As a rule, we can make manure cheaper, by feeding more grain, bran, oil cake, etc., to stock, than we can buy it. But it will be found that those who make the most manure will be the largest purchasers of artificial fertilizers. It is almost impossible to get as much manure as we can use to good advantage."

"You can not raise good barley," said the Doctor, "unless your land is thoroughly underdrained."

"Unless it is naturally drained," said I. "And even then it is not drained as thoroughly as we wish. Something may be done in the way of letting off surface water that will greatly facilitate spring work. On my farm we can often let off thousands of gallons of water while the ground is partially frozen in the spring, and before the water has time to soak into the soil. If it soaks into the soil, it has to stay there until it evaporates into the atmosphere. And every gallon we let off, gives the sun and air a better chance to dry and warm the soil. Farmers let off surface water from their wheat, but very few think it worth while to let off water from land unoccupied with crops. If they would do so, they would frequently be able to plow and work the land a week or ten days earlier in the spring."

Hints and Helps for Farmers.

A COMBINED ANVIL AND VISE.—It is rarely that we meet with so useful and cheap a tool, as the combined anvil and vise shown at figure 1. On the farm there is almost daily use for it, in the shop it will be in constant requisition, and in the house

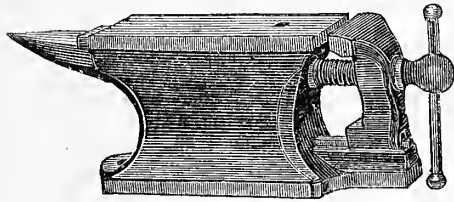


Fig. 1.—COMBINED ANVIL AND VISE.

the smaller sizes will often be found handy. When we can have two good tools in one, without depriving either of any of its value or effect, there is a gain. An anvil and a vise have a natural relation to each other, and it is a happy instance of ingenuity that has united these in one tool. The makers are the Richardson Manufacturing Co., of Worcester, Mass. The smallest size weighs 14 lbs., and the largest 40 lbs.

A CORN HARROW.—"J. R.," Livingston County, Illinois, sends us a sketch (fig. 2) of a harrow of his own make, with which he has harrowed corn very successfully. It is made in three sections, the bars are 14 inches apart, each section is separate, and moves independently, so that one can be lifted and freed from obstructions

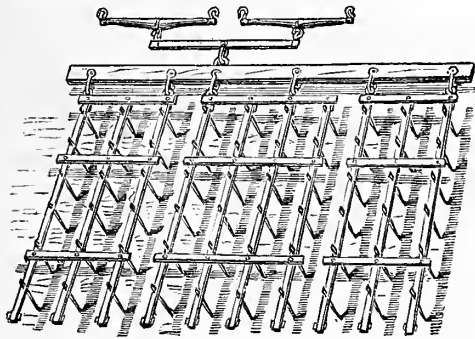


Fig. 2.—A USEFUL CORN HARROW.

without touching the others. This enables the harrow to ride over rough ground without missing the hollow places. The long bar is of 2 x 4 inch timber, and 12 feet long; the short bars are of 2 x 2 1/2 inch timber, and are 5 1/2 feet long. There are 60 half-inch steel teeth. The harrow will cover 3 rows of corn at a time, and has been used last season for harrowing the young corn four times. The same correspondent also sends a sketch of

A FIELD ROLLER.—A very good field roller may be easily made at this season, when timber is being cut, from a but-log of an oak-tree, in the form shown at figure 3. The log need not be a very large one, because the frame, in which it is mounted, enables it to be loaded to any reasonable extent, and

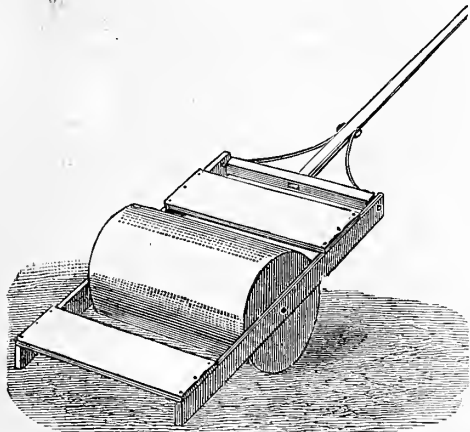


Fig. 3.—HOME-MADE ROLLER.

the driver may ride upon it, and thus add to the weight. A roller will be found very valuable in the

spring, when repeated frosts heave the ground, and throw out the winter grain. It may also be used with advantage during an open winter, when the ground is dry, to press back the plants, that have been lifted by a thaw, into the soil again. But it should never be used when the soil is wet.

DIGGING DITCHES.—Having been engaged the past winter in clearing and draining a piece of swamp land, for the purpose of having the ditches shaped properly, and of the proper size, we furnished the workmen, who were digging by contract, by the rod, with a frame made of laths, and of the exact size of the section of the ditch. This was 2 1/2 feet wide at the top, 1 1/2 foot wide at the bottom, and 2 feet deep, and a drawing of it is shown at figure 4. To level the ground, after the brush had been cut and burned off, we had a heavy hoe made in the shape shown at figure 5. This tool was very effective in cutting the roots of brush, the tussocks of grass roots, and leveling knolls into the hollows.

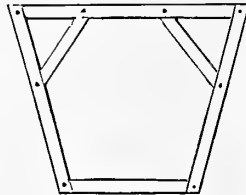


Fig. 4.—FRAME.

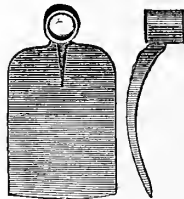


Fig. 5.—HOE.

The open winter has been very favorable for such work, and by the use of this hoe, the ground is leveled and put in good order for seeding with grass, very quickly and cheaply.

WORK FOR BAD WEATHER.—Our ingenious correspondent, L. D. Snook, of Yates Co., N. Y., sends us a number of sketches of useful devices, which will furnish both matter for consideration, and work for the wintry March days for those who find it desirable and convenient to make any of these handy contrivances. At figure 7 is a movable picket fence, which consists of panels made as shown in the engraving, and fastened by wires to short posts driven into the ground. Figure 6 represents a very convenient device for holding firewood, while it is being sawed with a cross-cut saw. The long piece of wood is placed in the bed formed by the cross-sticks, and is firmly held while each length is sawed off. The stakes should be placed as far apart, as the length of a piece of stove-wood, so that the cut can be made between each pair. A cover for a watering trough is shown at figure 8, which is devised to

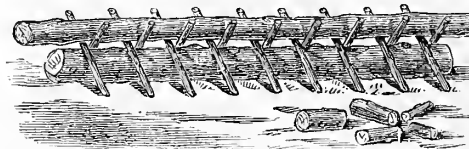


Fig. 6.—HOLDING WOOD FOR SAWING.

prevent the fouling of the water by trespassing animals. The cover is made of a board strengthened by cross-cleats, and hinged at each end to the trough. A handle, made of hard wood, and two feet long, is fastened to the upper side of the cover. When this is pressed down with the foot, the cover is raised, as shown by the dotted lines, and the stock can be watered. If necessary, a slot is cut in the cover, to avoid interference from the spout of the pump. When the animals have been watered, the handle is released, and the cover falls by its own weight.

PATTERN FOR A CHEAP IRON GATE.—"S. H.," Belleville, Ohio, wants a pattern for an iron gate for barn yards, to be hung upon stone gate-posts. At fig. 9 we give a very simple wrought iron gate, which would be serviceable, durable, and cheap. It is made of bars of iron 1 1/2 inch wide, and a quarter of an inch thick, bent as shown in the engraving, and having holes through which the bars of half-inch iron are passed. The bars are secured at each end by nuts and washers, or they may be riveted. A diagonal brace is fastened in the same way, and this may be drawn up, to raise the gate,

if it should sag, by turning the nut at the upper end. Wrought iron hinges, and latch, are provided.

CASTOR POMACE—A RICH COMPOST.—We have recently turned over one of the richest compost-heaps we have ever made. It consists of castor-oil pomace, manure from the poultry-house, sods from road sides, mud from ditches, and earth from the surface of a yard in which cows have laid at nights during the summer. One ton of the castor pomace was procured from a mill at St. Louis, and this was found so strong that it was quite sufficient to raise a very active fermentation, and a great heat in more than twenty times its bulk of other materials. The heap has been turned twice, and each time the heat has arisen, and an excessively strong smell was given off, until several inches of fresh earth was thrown upon the heap. It is now in fine condition for top-dressing, or the heap of at least 20 tons will

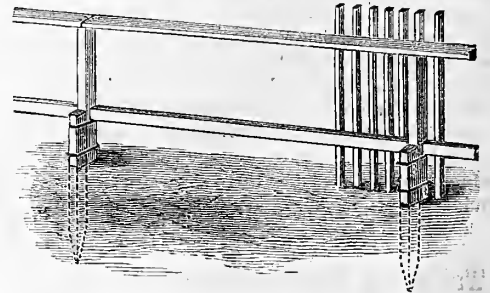


Fig. 7.—PORTABLE PICKET FENCE.

make a rich fertilizer for 20 acres of corn at the rate of one ton per acre, applied in the hill. The whole cost of castor pomace, and freight, from St. Louis, amounted to \$18, (bags included), the other

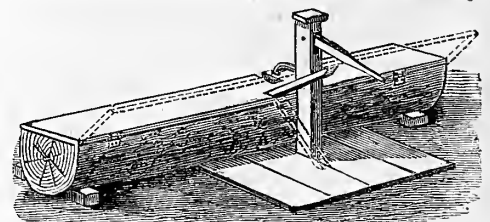


Fig. 8.—COVER FOR WATERING TROUGH.

materials have cost only a little labor, so that one dollar a ton will cover the actual cost. We estimate the value of the compost as at least five times that of an equal weight or bulk of ordinary stable manure, which would cost not less than \$2 per ton.

RECLAMATION OF A SALT MARSH.—Reclaimed salt marsh is valuable land for meadows, as well as for cultivated crops. Some of the most fertile fields in existence were formerly useless salt marshes, or overflowed land. By drainage and freshening, the rich soil is fitted to bear any kinds of crop. To encourage this profitable work of improvement, the Massachusetts Society for the Promotion of Agriculture offer some handsome prizes, varying from \$500 to \$25, for the best reclaimed tracts of salt marsh from 100 to 5 acres. The work may be

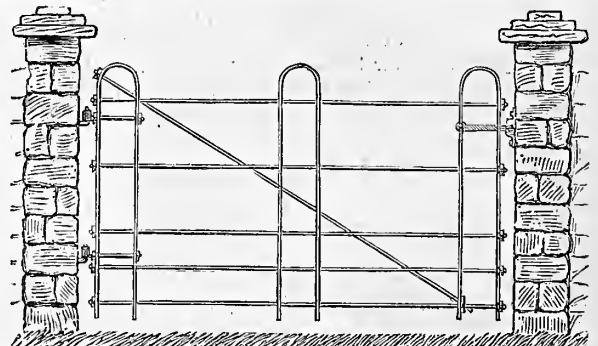


Fig. 9.—AN IRON GATE.

begun at any time, but must be finished by 1881, as the prizes will be awarded November 1st of that year. Particulars may be learned of E. N. Perkins, Secretary, Pemberton Square, Boston, Mass. The entries must be made by April 1st, 1878. Much

valuable information in regard to the drainage and reclamation of such marshes, with the construction of banks, ditches, and sluices, and the after cultivation of the land, is given in Stewart's "Irrigation for the Farm, Garden, and Orchard," published by the Orange Judd Co.; price, \$1.50; sent post-paid.

A Portable Slop Barrel.

A barrel, mounted upon wheels, as shown in the accompanying engraving, will be found useful for

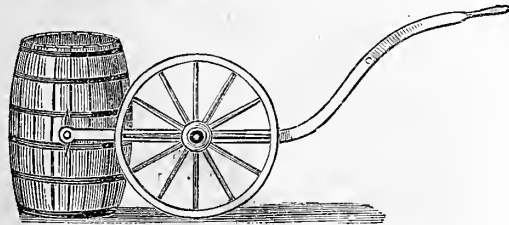


Fig. 1.—PORTABLE BARREL FOR SLOPS.

many purposes about the farm, garden, or household. The barrel is supported upon a pair of wheels, the axles of which are fastened to a frame which is connected with the barrel by means of straps bolted to the sides. The frame may be made of iron bent in the form shown at figure 2, or of crooked timber having a sufficient bend to permit

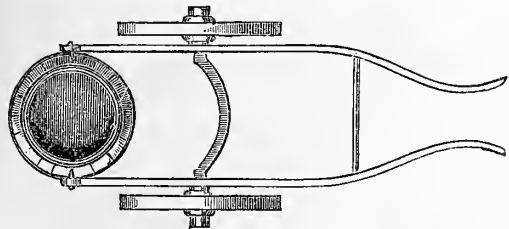


Fig. 2.—PLAN OF FRAME OF BARREL.

the barrel to be tipped for emptying. A pair of handles are provided as shown in the engraving. When not in use, the barrel rests upon the ground, and may be raised by bearing down upon the handles. The barrel may be made to rest in notched bearings upon the frame, so that by raising the handles, the wheels may be drawn from beneath the barrel, and the latter left in a convenient place until it needs removal. Figure 1 shows a side view of the barrel and frame complete. This contrivance will be useful for feeding slops to pigs, or for removing the waste of the house to the barn-yard.

A Table for Working Butter.

The increasing and profitable demand for a good

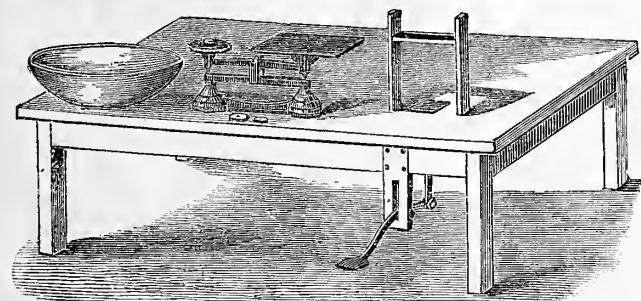


Fig. 1.—TABLE FOR WORKING BUTTER.

quality of butter put up for use, in acceptable forms, renders it desirable to have every facility for preparing the butter for sale in the best manner. Cakes, or pats of one pound, and half a pound, are the most popular, and the fancy seems to be inclined to a somewhat different shape from the ordinary round ones. Square cakes are not desirable, nor are they free from the serious objection that the moulds in which they must be made are not easily kept clean; it is best to avoid sharp corners

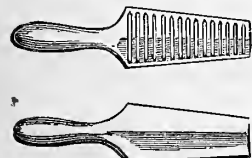


Fig. 2.—PADDLES.

in all dairy appliances. A compromise between square and round moulds may be reached by having them hexagonal or octagonal, and both of these forms are very popular. As the cakes have to be moulded and pressed, a properly furnished table will be found convenient for this purpose. Such a table is shown in figure 1, and can be made for a few dollars by any carpenter who sees the engraving. It is an

ordinary table, about five feet long, having room for a butter-bowl, scales, and presser. The butter is taken from the bowl, with the paddles, shown at figure 2, one of which is grooved on the face to prevent the butter from slipping off, and the other is smooth and sharp at the edges, so that it may be used for cutting as well as roughly forming the cake after it is weighed. These paddles may be made of white-ash or cherry wood. As the butter is weighed, it is worked with the paddles into a block that will nearly fit the mould, shown at figure 3. The mould is open at both ends, and should be placed, to be filled, upon the small platform, shown on the table. The follower (fig. 4) is placed upon the butter, and the foot being pressed upon the lever beneath, the mould is forced up against the top of the frame above it, and the cake is thus formed into proper shape; after which it is forced out of the mould by pressing the follower with the hand. A pail of fresh cold water should be kept at hand, and the mould, paddles, and platform should be kept wetted during the operation, by which the butter is kept from adhering to them.

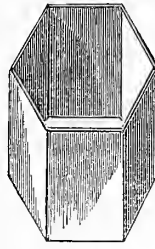
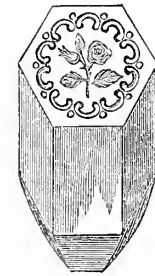


Fig. 3.—MOULD.



4.—FOLLOWER.

Sales of Hereford Cattle in England.

The Herefords are one of the old established standard breeds in England, where fashions do not change so suddenly as with us. There are many herds in that country which have been bred with care for scores of years, and a few that have been kept intact for even a full century. Occasionally the surplus of these old herds is sold off, and farmers and breeders seize, with great alacrity, the opportunity of procuring breeding animals. Prices rule high at these sales, and maintain great steadiness; they are therefore a fair criterion by which the value of the stock may be estimated. At some recent sales, the following prices were realized, viz.: cows \$685 to \$760 each, and bulls averaging \$283; one yearling bringing nearly \$700; this was at a sale of a herd belonging to Mr. Tudge, a careful breeder of wide reputation. At another sale a number of yearlings brought \$205 each. At a sale of a high class herd, which included a bull that has taken 14 first prizes in 4 years, the champion prize against all breeds at the Royal Agr'l Society Show last year, and 6 special prizes, the prices realized were much higher. This bull brought \$1,330; yearling bulls brought \$135 to \$360, and one 3-year-old bull \$1,265. Several other sales have occurred, at which there was very active competition for the bulls, showing that this breed is much desired for crossing; the most profitable use that high-bred animals can serve for the farmer or the grazier.

Plan of a Grist Mill.

Although the general appearance of a grist mill is quite familiar to most persons, and especially to farmers, the internal arrangement is by no means well understood. There are many millers and mill-

wrights too, who, though long used to old-fashioned country mills, are not aware of the many modern improvements and conveniences that have been introduced into the business of milling, nor of the great facility with which mills can be furnished, complete, from the main gear for conveying power from the water-wheel or steam engine, to the smallest detail, including screws, and nails, with which the parts are put together. Recently we examined a specification and plan for completely furnishing a grist mill, which were made by the Bradford Mill Company, of Cincinnati; the specification includes all the gearing, shafting, stones, and their furniture, feeders, hoppers, bolts, bolting chest,

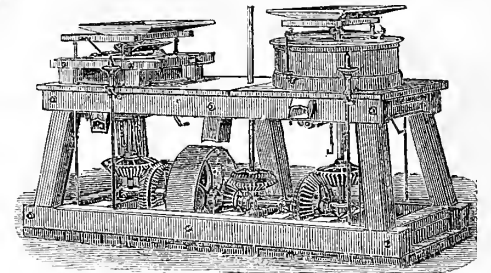


Fig. 1.—MILL STONES AND GEARING.

elevators, smut machine, belting, and all other accessories of a mill. The plan (fig. 2) shows the arrangement of a mill thus furnished, and is a sufficient guide for the erection of the building itself. The building is of two and a half stories, the ground floor is 12 feet in the clear, the second story 10 feet, and the half story 3 feet at the eaves. The burr stones, with their husk and gearing, are on the lower floor. The stones and gearing are shown separately at figure 1. The second floor contains the bolt, *D*, and gearing; the wheat bin, *J*, and the corn bin, *K*. The smutter and separator, *E*, is on the top floor; the elevator which conveys the wheat from the lower floor to the smutter adjoins the latter, and the cleaned wheat escapes by the spout upon the other side into the bin, *J*, from which it is fed to the stones below by the spout above them. The elevator for the corn is at *H*, and the elevator for the meal, *I*, adjoins it. The stones are driven by the pulley, (marked 2,) which makes 174 revolutions per minute; the upright shaft (3) makes 130

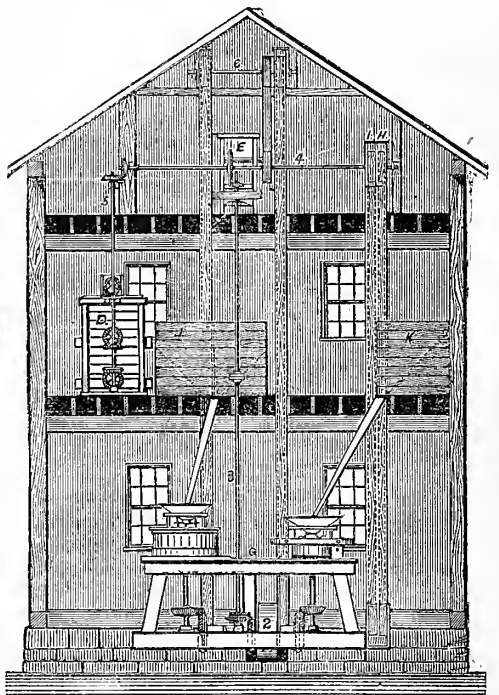


Fig. 2.—PLAN OF GRIST MILL.

revolutions per minute; the horizontal shaft (4) which works the smutter, corn elevator, and bolt, revolves 41 times per minute; the upright shaft (5) which drives the bolt makes 30 revolutions, and the horizontal shaft (6) driving the wheat and flour elevators turns 41 times per minute, being worked by a belt from the shaft, (4.) This arrangement is

simple and compact, and answers admirably for a small country custom mill, where wheat, rye, buckwheat, corn, and mixed feed are ground usually.

Barns without Beams.

The frequent use of the horse-fork and hay-

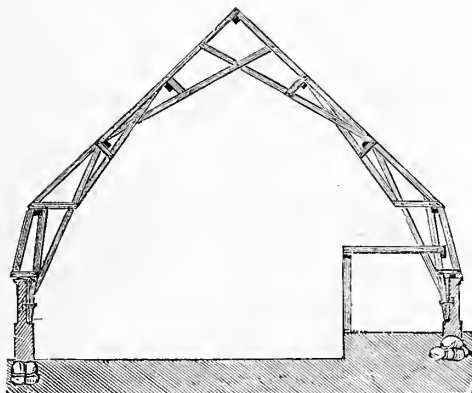


Fig. 1.—SECTION OF BARN.

carrier, renders it desirable to avoid cross beams in the barns, as these prevent the convenient movement of these implements. Formerly it was necessary to have the hay mows so low that a man could easily pitch the hay on to it from a wagon. This made it necessary to have the barn long and wide, in order to secure sufficient capacity. The roof is the most costly part of a building, and as the wider the roof, the stronger the frame must be to sustain the weight, the old-fashioned style of barn was very costly. The machinery now in use for handling hay, enables us to avoid the extra cost of building, and long, high, narrow barns are found to be more convenient, in many cases, than the low, broad, and short ones. But to construct a barn without cross beams to support the sides and roof, is a difficult problem for the ordinary builder, who does not understand the nature of truss work, and the immense strength gained by skillful use of comparatively very light timber. The airy, web-like railroad bridges, which combine strength with lightness and elasticity, and the ordinary balloon frame houses, are examples of truss work, and there is cer-

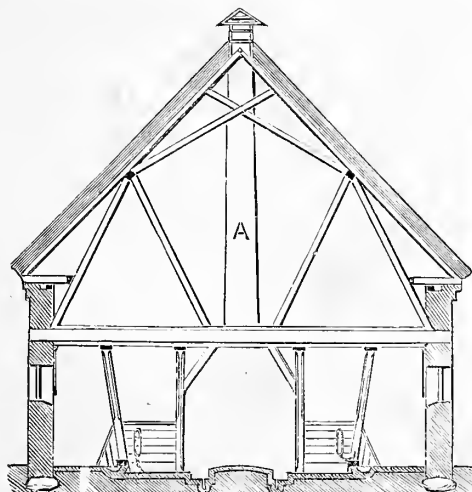


Fig. 2.—SECTION OF COW-HOUSE.

tainly no reason why this principle of construction should not be made available for farm buildings. Some time ago (August No., 1876), we illustrated an

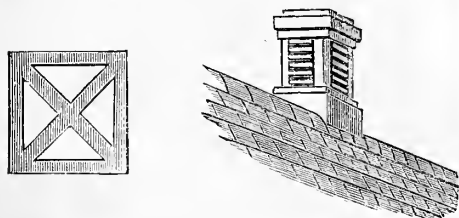


Fig. 3.—VENTILATOR FOR ROOF.

octagonal barn, in which there were no cross-beams, and we now give some examples of barns of ordi-

nary shape, without cross-beams, and with roofs made on the principle of the truss. The section, fig. 1, is that of a Danish barn, illustrated in the "Journal of the Royal Agricultural Society," of England. The mode of construction is shown very clearly by the engraving, it being only necessary to point out the longitudinal timbers, which are shown by the dark shaded parts, and the manner of securing the roof timbers to the walls, which is done in an ingenious manner. The \neg shown by the dark lines in each wall, is an angle-iron, built into the masonry, by which the strut is fastened to it. At figure 2 is a section of a cow stable, built above where the fodder is stored, somewhat on the same principle. The arrangement of the stable below is also worthy of notice. The central passage is the entrance-way for the cows, with a manure gutter on each side, in the rear of each row of stalls. The feeding passages are on the outside, and the cows are fastened by chains, which slide on the irons seen on the sides of the stalls. A ventilating shaft (A, fig. 2) is carried up from the stable, through the floor above, and out through the roof. This is divided so as to form four distinct shafts, through which cold pure air can descend, as well as hot foul air can ascend. The section of the shaft, and the upper extremity above the roof, are shown at figure 3. The

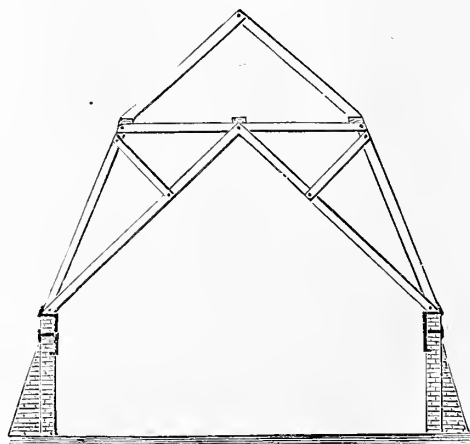
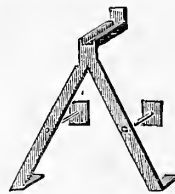


Fig. 4.—FRAME OF LIGHT TIMBER.

framing of the roof is simple, light, and strong; the roof is covered with straw thatch, shown by the thick, dark, shading. At figure 4 we give a method of a similar construction by means of light timbers fastened together with bolts. The walls are of stone or brick, and if thought desirable, these may be strengthened by buttresses wherever the roof timbers exercise the greatest thrust. The main timbers are intended to be 3x10, the braces 2x8 or 3x6, as may be thought proper. Cross girts may be used wherever needed to stiffen the roof. The ends of the main timbers should rest in iron shoes fixed to the wall by angles and bolts. The form of a shoe that would be useful to sustain the weight of the timber and its load, is shown at figure 5. This may be cast or may be made of wrought iron. The building is intended to be 36 feet wide; the walls 12 feet high; the main roof timbers 20 feet long, and the cross-beam at the top 24 feet long. The machinery for carrying the horse-fork will be suspended to this beam in the usual manner.



5. SHOE FOR BEAM.

Mutton Breeds of Sheep.

People are too apt to be misled by appearances. This has been the case in regard to the magnificent, large-bodied, long-wooled, Lincoln, and the equally fine, though lesser, Leicester sheep. Western farmers, in some cases, and many Eastern farmers, have been misled by the appearance of these sheep into the mistake of trying to keep them. Some notable instances have occurred in Colorado, Kansas, Nebraska, Minnesota, and other Western States. In every case within our knowledge, these

large sheep have come to grief, and the experiment of keeping them has failed. The conditions are not favorable for them. They have been bred and hitherto kept under totally different circumstances. Their native English climate is free from the great and sudden changes to which ours is subject. There, these sheep experience none of the torrid heats and drouths of summer, nor of the severe dry cold of the winter. Their food is rich, plentiful, and succulent; roots, rye-grass, and oil-cake, have been the food upon which they have been built up, and here we have not that kind of food to supply them, or at least it is only in rare cases that such food is provided. Where large-bodied long-wool sheep are fed and kept in a manner according to their needs, they thrive well and are profitable to their owners. We have seen a flock of such sheep sold in the New York market at prices that were satisfactory and remunerative. A lot of sheep of this kind, 160 in number, which was recently sent from Canada to New York for sale, averaging over 160 pounds in weight, some of them reaching 300 pounds—and brought 6½ cents per pound live weight. If this can be done in Canada, it can be done in many parts of the United States, and probably anywhere, where the summers are not too hot and dry for their comfort, and the profitable growth of rich fodder and root crops. Elsewhere we do not believe disappointment can be avoided with this class of sheep. The choice of breeds of mutton sheep is large enough to meet all the requirements of those who wish to keep them. The Cotswold, Shropshire, Oxford Down, Hampshire Down, South Down, and the grades of these breeds, taken probably in the order in which they are named, are all excellent sheep in every respect, being hardy, not too exacting in the way of housing and feeding; and will thrive upon mixed farms where they can be supplied with fresh green fodder, roots, and fair pasture. Where these requirements cannot be met, these sheep should not be kept, but fine-wools and half-breds will be preferable. The keeping of sheep can hardly fail to be profitable when judgment is exercised in their selection and they are skillfully managed. But, as in other things, unless this business is well done, it had better not be done at all, because if profit is not made, there will be a loss. If a flock is not kept in good condition, it becomes bad altogether; in sheep-husbandry, one must either swim or sink, and nothing runs down so fast as a flock that is neglected or badly managed. On the same day, when the Canada sheep, before mentioned, were sold at an average of more than \$10 per head, some poor natives were sold at 2½c. per pound, bringing about \$1.50 each. The shipper of these, and probably the feeder, must have lost money; it is certain that there could be no profit in such sheep, and at that price, when freight and expenses are paid. An example of this kind will help to point the moral we endeavor to enforce continually, in this as in all other matters pertaining to farm work, viz.: that it is only the best work that pays, and that live stock must be selected judiciously, and in reference to all the peculiar circumstances of each individual and of each locality.

Keeping Pure-bred Stock.

Many farmers have made the mistake of trying to keep and breed a herd, or flock, of pure-bred animals, and have, through their frequent failures, brought discredit upon such stock. Pure-bred stock, as a rule, are not profitable for farmers. They cost too much; no farmer can afford to pay \$2,000 to \$3,000 for a herd of 10 pure-bred cows. They are used to careful tending and high feeding, and their product is no greater than the average of good grades of these breeds. "We know of no herd of pure-bred animals in existence, that would pay its cost of purchase and keeping by its product of milk, butter, or meat, alone; it is only by the sale of animals for breeding that the profit is made. But admitting this to be true, pure-bred stock are not, for this reason, to be considered of less value. If we have not the pure stock, how can we procure the grades, which are found so profitable? Grades, of high character, are the most profitable farmers'

cows. Experience proves this to be so in every case. A most notable instance of it is found in the herd of Mr. Thomas Fitch, of New London, Conn., who has been engaged in crossing the Jersey upon every other breed, including what are known as "native" cows, for more than 30 years. This breeder keeps a herd of choice pure-bred animals, descended from the old-fashioned importations, made when the butter product was more thought of, than black points, solid-color, or other fancies, for the purpose of raising grade cows of large producing capacity of rich butter. Probably no breeder in the country has been more successful in his line, and his success is an example for farmers, which proves that it is best to choose one breed with which to improve his native stock, to adhere to that, gradually grading up his herd, and selecting only the best to breed from. One pure bull, which may cost \$250 to \$300, will sire, during his vigorous period, at least 50 calves, thus adding a small trifle to the cost of each over that of a calf from a common scrub bull. By adhering to one breed, there is a certainty of arriving at a definite result very soon; but by the too frequent habit of changing every two or three years, no satisfactory result is gained, and after a life-time of futile effort, the farmer ends where he begun, and berates pure-bred stock as the cause of his failures. As with cows, so with sheep, swine, and poultry. The pure breeds are not found profitable to keep, except for their services in raising grades, and in keeping up a supply of breeding animals for this purpose. In this way a farmer, who can afford it, may be justified in purchasing two or three pure-bred animals for improving a herd of good natives, and if he uses these with skill, he may find it very profitable.

The Use of Horse Powers.

We do not know of any farm machinery which pays a better profit on its cost, or is of greater convenience than a horse-power and threshing machine. To thresh by hand and the flail may be advisable under some unusual circumstances, such as at the present time when manual labor is very cheap, and it is desirable to find employment for worthy workmen during the winter; but in general it is imperative that this and other work be done out of hand, so that other jobs may be attended to. For this purpose nothing is more convenient than to have a horse-power and attached machinery in the barn which can be put to work at an hour's notice. Besides when the weather is stormy and unfavorable for out-door work, the threshing, wood cutting, or fodder cutting, may be done in-doors without the employment of any outside labor. Three persons, one man and two boys, are sufficient to work a thresher with a two-horse tread-power, and these can thresh in one hour as much as one man can beat out with a flail in a whole day.

The principle upon which a tread-power is made to operate, is that of the inclined plane, which is one of the so-called mechanical powers. In one sense the effective force is gained by means of the weight of a falling body. In this case the weight is that of the horses, and if the team weighs 2,000 pounds, and the inclination of the moving floor of the machine is $1\frac{1}{4}$ foot in 10, with a speed of 220 feet per minute, or about $2\frac{1}{2}$ miles per hour, we have two horse-power, or the equivalent of 66,000 lbs. raised one foot high per minute. This may be shown as follows:—At the speed and the inclination mentioned, the horses traveling 220 feet per minute, would raise themselves exactly 33 feet high in that time, if the inclined plane were stationary and long enough, and weighing 2,000 pounds, they actually raise what is equal to $2,000 \times 33$, or 66,000 lbs., one foot high; but as they descend on the inclined plane as fast as they walk, they in reality create a power equal to a body weighing 66,000, falling one foot per minute, which is precisely two nominal horse-power. It is evident that the total effective force utilized in work depends upon the excellence of the machine, and it is just here that the principle of the railroad-tread powers is noteworthy. The structure of these machines is such that friction, which is destructive of power, is reduced to the

least possible amount. The traveling bed runs upon wheels which move in a smooth metallic track, thus preventing any more than the least possible friction or waste of power. The whole weight of the horses is employed to the best advantage, and if the machine is used in a careful manner, and accurately set up, with both ends perfectly level, kept clean, and properly oiled, there is a very small loss of power. We have used one of these powers for several years with great satisfaction, and without finding the work to be at all severe upon the horses—in fact, it is much easier than work in a mowing machine. When inclined to take the work quietly, we have used only one horse in a two-horse power, changing horses at noon, for either threshing, sawing wood, or cutting fodder. A great variety of these useful machines, both for one-horse and two, is offered to those who need them. While there are differences in their style and make, which may go to influence the choice of a purchaser, yet we can hardly say that there is any great preponderating excellence in any one over all the others; and if there is one that is in any respect inferior to another, we can justly say that the least effective machine made is of sufficient value to satisfy any farmer that he has the worth of his money in exchange for it. Among the manufacturers of these machines worthy of notice in different localities, we might mention Wheeler & Melick Co., Albany, N. Y.; Minard Harder, Cobleskill, N. Y.; A. B. Farquhar, York, Pa.; B. Gill & Son, Trenton, N. J.; G. Westinghouse & Co., Schenectady, N. Y.; W. L. Boyer & Son, Philadelphia; New York Plow Co., New York, (who make a one-horse-power), and A. W. Gray & Sons, Middletown Springs, Vermont. In another portion of the *American Agriculturist* the special points of both horse powers and threshers are set forth and illustrated by engravings, and whichever of these machines may be selected for purchase, it will be found that the manufacturers not only have a high reputation, but by the excellence of their wares are desirous of deserving it.

EFFECT OF BONES ON DAIRY FARMS.—As an evidence of the great value of a dressing of bone-dust upon dairy farms, we have the testimony of an English agricultural writer of high repute, and the author of a Royal Agricultural Society's Prize Essay. This gentleman states that since bone-manures have been applied to the Cheshire pastures, the product of the soil in herbage and cheese, has been greatly increased; in many cases having been actually doubled. The increase of stock kept in the locality has been from 30 to 50 per cent, and in one case, of a farm of 160 acres, the number of feeding stock has been enlarged from 20 cows and 3 colts, to 35 cows, 8 feeding heaves, 16 yearlings and heifers, 5 horses, and 3 colts. But at the same time it is true, the quality of the cheese has been, to some extent, deteriorated, except where the most skillful management has been applied to the manufacture; the richer herbage being found to produce milk which requires the greatest care and skill in every step of its manufacture into cheese.

Portable Poultry-Houses.

Poultry-houses that may be moved from one place to another, could be made useful in gleanings grain fields, in clearing newly-plowed ground of insects, and in other desirable ways. A movable poultry-house is by no means novel, it having been described and used years ago. A French author on galliniculture, Geyelin, described one many years ago, which was used in grain fields to gather the scattered grain after harvest. This was constructed something like one of those vans used in transporting animals kept in traveling menageries. It was 20 feet long, about 7 feet wide, and the same in height. A set of steps was fixed at one end for the fowls to enter and leave, and nest-boxes and roosts were provided within. Several of these houses were drawn to the field, and one of them was furnished with a small apartment for the keeper who attended to the fowls. A large number of fowls could be accommodated in one of these houses, as they were intended to be cleaned daily, and the

droppings scattered upon the ground around them as they were moved from place to place each day.

A description, with drawings, of a useful porta-

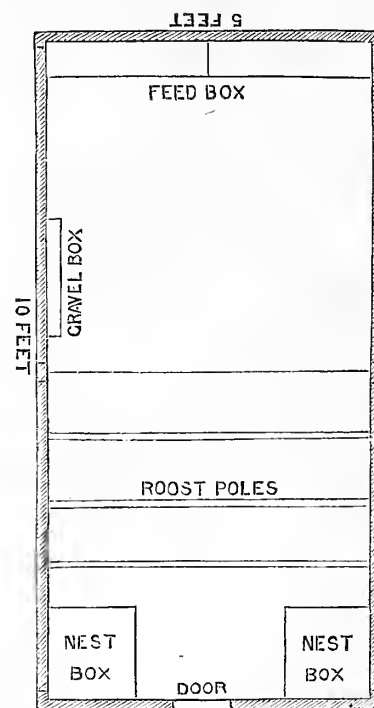


Fig. 2. GROUND PLAN OF PORTABLE POULTRY-HOUSE.

ble house, has been sent to us by A. R. Sproule, of Picture Rocks, Pa. These were made expressly for the *American Agriculturist*, and the design is not patented by Mr. Sproule, but is offered freely to our readers. A view of the house is given in figure 1, on next page. It is of wood, and, as will be seen, is mounted upon an axle and a pair of wheels. By means of a pair of levers, raised to the position shown by the dotted lines, the house is lifted, and made to rest wholly upon the wheels, so that it can be moved from place to place as desired. Figure 2 shows the ground plan, with the boxes for feed, water, and gravel. These are secured to the sills, and are kept clean by a sloping cover of small rods. The house is 10 feet long, by 5 feet wide, and as high as may be necessary. The nest-boxes, 16 inches square, and 4 inches deep, are secured to the upper corners of the enclosure, a small door being provided for reaching the eggs. The roosting poles are so arranged that the fowls can easily climb from one to another. Figure 3 shows a single section of the open work of the enclosure, nine of which are used in the structure. This is made of oak rods, and rails, which are bored to receive the rods. Any cheaper method of construction may be used.

How the House is Made.

The size may be 5x10 feet, or 4x8 feet, and 5 feet high to the eaves. The sills are made of $1\frac{1}{2}$ x3 inch stuff, laid flat down, halved together at the corners, and nails driven through upward into the ends of the posts. The corner posts are 3x3 inches, the middle ones are 3x4 inches. Each is properly mortised to receive the rails of the open sections. A light cornice, or a $2\frac{1}{2}$ -inch band, is securely nailed around the top, a little above the eaves,

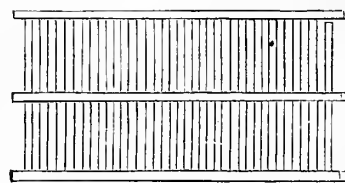


Fig. 3.—SECTION OF OPEN-WORK.

leaving sufficient room for the roof boards to pass under between the band and the upper rail. To the back side of this band is nailed the balustrade, each piece having its ends toe-nailed to the posts. A light ridge pole is attached at each end to the balustrade near the top, which forms a double-pitch flat roof. This is made of one thickness of $\frac{3}{4}$ -inch boards, the same as the enclosed sides. The upper

section at the end, over the feed trough, is hung with hinges for a door, through which to place feed, etc. The levers have their fulcrum ends resting on the axle, and are bolted to it. About 12 inches from it, and opposite to it, and through the middle posts, are pivot bolts, on which the weight of the house hangs when the levers are being worked. Narrow strips are used as braces for stiffening the frame lengthwise, which are placed inside, also bits of hoop iron should be used about the corners to strengthen the joints. With these appliances, and proper tools, any skillful mechanic can complete the job. Its weight is about 300 pounds, and the house affords room for keeping from 12 to 24 fowls through the season. The advantages of such a house are that the fowls are under perfect control, and are kept quite as healthy as when running at large. Every morning, when the house is moved, there is provided a clean, fresh apartment, with fresh earth and grass. Fowls become thoroughly domesticated by being thus treated. Those that are inclined to sit, are put outside, they will hang about, and make an effort to get in, and the desire to sit soon passes away. The manure is all saved to the best advantage.

New and Wonderful Farm Seeds.

Our regular dealers—by our we do not mean New York City only, but the whole country—endeavor to keep well up with the times, and supply such seeds as have an established reputation, or which seem worthy of further trial. But aside from the regular dealers—men known in their trade all the way from Boston and other New England Cities, to Omaha and other Western localities—there seems to be a set of men at work with seeds not known in the

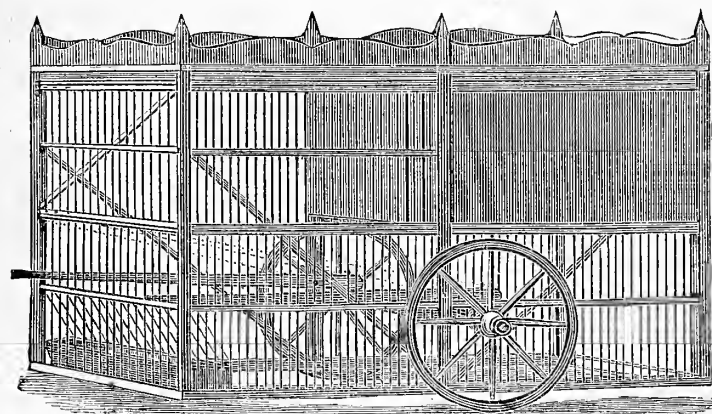


Fig. 1.—SPROULE'S PORTABLE POULTRY HOUSE.—(See page 99.)

regular trade; and they do not advertise them, so far as we have seen, in the well known agricultural papers. Our correspondence shows that these seeds are offered by mail, with very attractive terms to agents, and by the aid of circulars, which promise very largely. Indeed, if the statements in these circulars are true, the knowledge of the excellence of the seeds should not be confined to the few who receive them, but ought to be known to the whole farming community. Leaving other seeds out of consideration for the present, we give special attention to a grain which has turned up, under one name and another, during the last ten or a dozen years, as a

Wonderful Wheat or Rye.

In this article we do not propose to discuss the intrinsic value of the grain in question. That it may be useful in some localities is possible, if not probable. What we now wish to show is, that the grain is offered in a very peculiar manner under a variety of names, and in a way likely to confound and bewilder the farmer, who may come across the circulars of those who sell it, and who might wish to make a trial of it. Our first acquaintance with this particular grain was under the name of

Nevada Rye.

Some 10 or 12 years ago, we went, in company with our friend A. S. Fuller, now the competent agricultural Editor of the N. Y. "Weekly Sun," to

see a remarkable Rye at a commission house in the City. It was a clean and heavy grain, unlike any rye we had ever seen, and offered at \$10 the pint. Since then both Mr. Fuller and the writer, have kept the run of, and exchanged samples of this grain as it has come under different names. In the course of several years, we have received specimens of the same grain—that is, so far as external appearance, aided by the microscope goes, identically the same—from various parties, some times as rye, and at others as wheat. As follows:

Montana Spring Rye.	Diamond Wheat.
Montana Rye.	Wild Goose "
Russian "	Big Seed " or
Nevada "	Wheat of Taos.

As said before, we leave the question of the real value of the grain out of consideration. If it has any real value, the important point is, *what is the grain?* Is it Rye or is it Wheat? If Rye or Wheat, what is its proper name? Without troubling the reader by a relation of the steps by which we have arrived at the conclusion, we feel perfectly safe in giving it as our opinion that this many-named "Wheat" or "Rye," is simply the old, very old, grain known in Europe as Polish Wheat, *Triticum Polonicum*, and which has in Europe about as many different names as have been given it by the seed speculators in this country. This is a *distinct species* of wheat, and as different from the varieties ordinarily cultivated as *wheat*, as are the several forms of "Spelt" or "Speltz Wheat." We are so well convinced that this remarkable Wheat, or Rye, offered in this country under the various names given above, is the "Polish Wheat," or *Triticum Polonicum*, and nothing else, that we give an account of

The Polish Wheat.

which would seem to be a misnomer, as it is of African origin, and has been cultivated in Egypt and other portions of Northern Africa from very early times. In France, so unlike is it to any ordinary wheat that it is known as *Seigle d' Afrique*, or "African Rye." According to Klippart, in "The Wheat Plant," this species is known in Europe as Wallachian, Astrachan—and Egyptian Corn, Gounner, Symaker, Silesian, Cairo, and Double Wheat, in Germany; as Blé (wheat) d' Egypte, Blé de Surinam, Blé de Magador, Blé de Pologne à Epi Divariqué, in France, Fromenta di Polonia in Italy, and as Trigo di Polonia in Spain. He mentions four varieties, and Madame Vilmoren, who wrote the very elaborate article on Wheat for the "Encyclopédie Pratique de l'Agriculteur," mentions its great tendency to vary, and figures two of the most striking forms. We give here an engraving of a head of this grain raised in this country; it differs from the common wheat in the great size of its *glumes* and *palets*, or the envelopes which form the chaff; these are very large, and usually have very long awns, or bristles, though in some of the European forms these are much smaller, and there is probably the same variation in this respect that there is in our ordinary wheats. The grain of the Polish wheat is long and narrow, semi-transparent and horny in texture. When cut under the microscope, a grain of ordinary wheat is opaque and floury, but this shows nothing of the kind. We give in figure 2 a grain of this Polish wheat, by the side of a very good sample of common wheat, which serves to show their relative size and shape. We are



Fig. 2.

now, and all the time, in favor of the introduction of any *valuable* new seeds, whether of farm or garden crops, and will do all that we can to make all meritorious things—wherever they may originate—known to our readers. But we have the right to insist—on behalf of the farming community—that these "novelties" shall be introduced under their proper names. When Mr. Osment, of Bradley Co., Tenn., offers as "Something New," "Our Big

Seed Wheat—Wheat of Taos,"—"Taos" being the one-horse-est of all the "one-horse" towns in New Mexico,—and Mr. Tipton, of the same Co., Tenn., offers "Diamond Spring Wheat," "claimed to be imported from Chili," and when we compare the "Big Seed Wheat," and the "Diamond Spring Wheat" under the microscope, and can not tell "one from t'other, or t'other from which," we begin to think that the seed business in Tennessee is rather mixed. Moreover, when we take Tipton's engraving of his "Diamond Spring Wheat," with the stalk end pointing to the right hand, and place it over Osment's cut of "Big Seed Wheat," with the stalk end at the left hand, and hold them up to

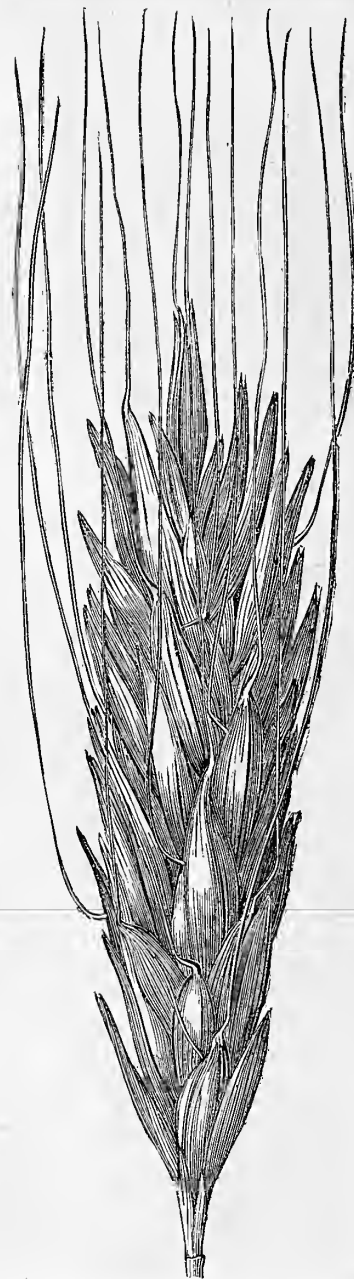


Fig. 1.—POLISH WHEAT.—(*Triticum Polonicum*.)

the light, and find them to be one and the same engraving, we wonder—yes, very much do we wonder—that two such remarkable wheats should be so much alike. But our wonder as to the wheats of said Osment and Tipton is as nothing, when we contemplate their corn. What wonderful seeds these Bradley Co. people have! We do not propose to advertise them until we have tried their corn, of which we have a supply from headquarters, but when their corn gives us, according to circular, "from 4 to 14 large size ears on every stalk," we shall gladly announce the fact. In the meanwhile, we advise farmers in general to touch all these wonderful seeds gently. With these, as with all other novelties, we say—*go slow*. If disposed to test them, invest only what you can afford to lose. If they prove to be of any value, a small sum should give you enough to supply you with seed for another year.

Alpine Plants for Common Gardens.

Those who have visited high mountain regions in any part of the world, must have noticed the



SCARLET WIND-FLOWERS.—(*Anemone fulgens*.)

abundance and brilliancy of the flowers which grow in those elevated localities. The plants found in these places have generally a low habit, pleasing foliage, and abundant and often brilliant flowers, which are all the more attractive on account of their dreary surroundings. Several works have been written upon Alpine plants (the best of which, Mr. Robinson's, was noticed a few months ago), and some catalogues make a special list of such plants, and both works and catalogues indicate, that while there are some Alpine plants that can only be satisfactorily cultivated when their native locality is imitated by an artificial rock-work, there are many others that will flourish in the ordinary garden. Some of our native plants that are never found growing wild except in wet and swampy localities, when taken to the drier and rich soil of the garden, flourish quite as well as, if not better, than in the wild state. So, many of those plants that naturally grow only in Alpine regions, make themselves quite at home in our garden borders. The term *Alpine*, as applied to cultivated plants, is one not easy to define. While some of the natives of high regions are very difficult to manage, and can only be successfully cultivated when the peculiarities of their natural habitats are imitated, others, and perhaps the majority, will flourish in the ordinary border, especially if they have a mulch of stones to prevent their roots from drying out. As an illustration of this: One of our associates several years ago went on an expedition to the Rocky Mountains. As occasion offered, he sent home roots by mail; they came without labels, and all we knew of them was, they were plants from the Rocky Mountains. We had boxes filled with an open soil, set out the roots, and then paved the surface with stones from the size of a walnut, upwards. Of course these stones acted only as a mulch, but they saved many of the "Alpine" plants. Experience has taught us one thing about these plants: If the natural locality of a plant is "Alpine," that it is no reason that it will not flourish in our garden borders. We give here illustra-

tions of a few flowers usually classed as "Alpine," which may be grown in any ordinary garden.

The Scarlet Wind-Flower.

Our native Wind-flowers, or Anemones, especially the earliest, the Wood Anemones, (*Anemone nemorosa*), are noted for their delicacy of habit and of coloring, but the Scarlet Wind-flower (*Anemone fulgens*) of Southern Europe is quite the opposite of this. Instead of a modest habit and delicate color, it asserts itself in the most positive manner. Its flowers are erect, and the color of the most intense scarlet. As a general thing, the flowers of spring have delicate tints, but this shows the striking, vivid scarlet of the flowers of mid-summer. Travelers in Southern Europe and Western Asia, speak of the brilliant flowers of this species as appearing above the snow. The foliage of this plant is deeply lobed and toothed, and is of itself handsome; the flower-stems arise from this, in vigorous plants, a foot high, bearing flowers about two inches across, of the form shown in the engraving, and in color of a most intense scarlet, with which the blackish color of the stamens presents a strong contrast. No spring flower within our knowledge is so brilliant as this. It is one of those plants which were introduced many years ago, but for some reason fell into neglect, and within a few years has been revived as a novelty. It seems quite hardy, and aside from its utility as a border plant, it will no doubt prove excellent for forcing in greenhouse or window culture. In contrast with this most gaudy of spring flowers, is one with the botanical name of *Omphalodes verna*—the name *Omphalodes* means "navel-like," and refers to some resemblance of the seed to the navel. Its common name is

Creeping Forget-Me-Not, or Navel-Wort.

The plant is a native of the mountain woods of Europe, and has proved perfectly hardy in this country. Its common name, "Creeping Forget-me-not," indicates its relationship to the well-known "Forget-me-not," but it is quite unlike that in habit, as it creeps closely upon the ground, while it carpets with smooth, bright green foliage, from which arise numerous flower-stems about 6 inches high, bearing clusters of several flowers, each about 1/2-inch across, of the most intense blue, which is rendered all the brighter by the white spot, or

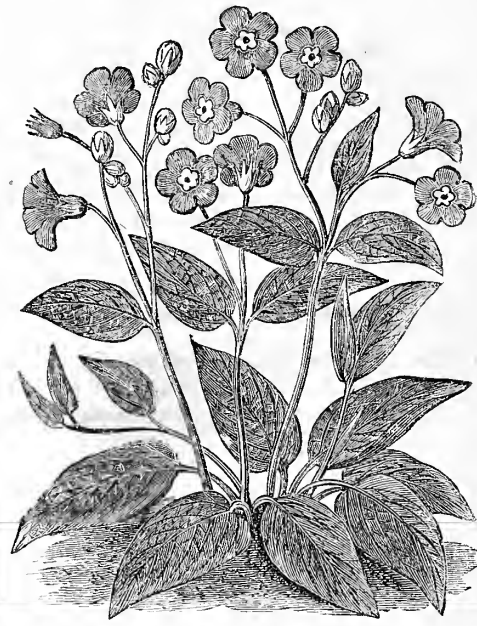


SEA CATCHFLY.—(*Silene maritima*.)

"eye," at the throat. It begins to flower in early spring, and in a moist locality will continue well into the summer. This promises well as a plant to carpet beneath shrubs, as its mat of foliage is pleasing, even when there are no flowers. Among plants usually classed as "Alpine," is one common in Western Europe on rocks and mountains by the sea,

The Sea-Side Catchfly,

which we had growing last summer, and were much pleased with. In making a collection of hardy herbaceous flowers, and testing about everything that



CREeping FORGET-ME-NOT.—(*Omphalodes verna*.)

promises to be desirable, we have frequently come across some very old plants, which, as we had not happened to grow them before, had to us all the interest of novelties. This was the case with the Sea-side Catchfly, *Silene maritima*, a native of the sea coast of Great Britain, and one of the oldest of garden plants. Still, when its tufted mats of foliage, were studded all over with little white flowers, it was just as pleasing as if it were the latest introduction from some far country recently for the first time explored. Wishing to know on what part of the British coast this grew, we consulted Bentham's "Handbook of the British Flora," and found that he regarded it as merely a sea-side form of the Bladder Campion, *Silene inflata*, a plant found in New England and New York to Pennsylvania, as an introduced weed. The habit and general appearance of our garden *S. maritima*, is so unlike that of *S. inflata*, that we were surprised to see it thus disposed of, and looking to see what other botanists had done with it, we found that while some agree with Bentham, others, and among them Hooker, regard the sea-side plant as a distinct species. So far as garden qualities go, the two plants are abundantly unlike. The Sea-side Catchfly forms dense turf-like masses of glaucous foliage from among which arise the stems bearing one to four pure white flowers; the calyx is inflated or bladdery, and the petals deeply notched in the middle, each with a large scale, and these scales together form a crown at the throat of the flower. The engraving, of the natural size, gives an idea of the flower, but does not show the mass of foliage. It is one of those accommodating plants that will grow almost anywhere, and is always pleasing for its neatness, and the abundance of its bright white flowers, which bloom nearly all summer. For

materials to make engravings of these plants, we are indebted to Messrs. Woolson & Co., Passaic, N. J., who make a specialty of Hardy Herbaceous and Alpine plants. The illustration of *Anemone fulgens* is from a plant forced for the purpose, showing that it will be useful for greenhouse or window culture. The same is true of *Omphalodes*

verna, of which Robinson, in his work on "Alpine Plants," says: "Tufts of it taken up and forced in mid-winter, form beautiful objects in pots or baskets in the conservatory." Of course, whatever may be done in the "conservatory," may be accomplished by the careful window gardener. Those who cultivate window plants, may derive much pleasure from forcing the common plants of the garden. If these, such as *Dicentra spectabilis*, ("Bleeding Heart"), *Astilbe Japonica*, often called *Spiraea*, and even such low-growing shrubs as *Deutzia gracilis*, *Spiraea Thunbergii*, in fact, any of the early flowering herbaceous plants or shrubs, are potted in autumn and brought to the window in February, they will flower abundantly, and when done may be set out in the border to recuperate.

A Pruner for Blackberry Bushes.

The annual cutting away of the old canes of blackberry, raspberry, and other prickly plants, is

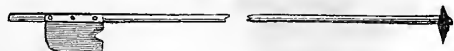


Fig. 1.—BLACKBERRY PRUNER.

not a desirable job, and with the ordinary pruning knives and shears, one is quite sure to come out of the battle well scarred. Several pruning knives for this work have been contrived, and we have illustrated a number of them. We now give engravings of one designed by Mr. J. A. Umfreville, of

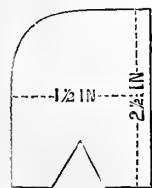


Fig. 2.—BLADE.

Rhode Island, who sends sketches of his contrivance, as a partial return for the many useful hints he has received from the *American Agriculturist*. Figure 1 shows the pruner complete; the rod is of 1/4-inch iron, and 30 inches long, with the blade at one end, and a handle at the other. The cutting portion, or knife, shown in figure 2, is made from an old saw-blade; it is 2 1/2 in. long, and 1 1/2 in. wide; the cutting portion is a triangular notch 3/4 in. across at the lower or open part, and the edges made very sharp. The cutter is attached to the rod by making in that a dove-tail notch, as shown in fig. 3. The cutter being placed in the notch, with the brass strip, fig. 4, over it, all are riveted firmly together by means of rivets put through holes made for the purpose. This is evidently a useful implement for pruning blackberries and similar shrubs; it is of course used with a sudden pull towards the operator, and needs to be, as an implement made after this pattern would be, very strong in all its parts.



Fig. 3.

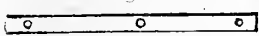


Fig. 4.

What Strawberries Shall I Plant?

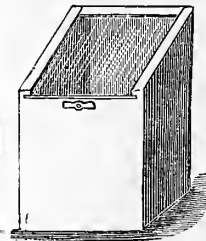
The strawberry is the fruit of the people. If one has room to raise no other fruit, he tries to find a place for the strawberry bed, knowing that freshly picked strawberries, ripened upon the vines, are about the greatest luxury that poor mortals can enjoy. When asked as to varieties 10 or 15 years ago, we could only answer, "plant the 'Wilson,'" for that was then the only one that one could set out with the hope of getting strawberries. The "Wilson" was a safe variety to plant, as one who had vines was very sure to pick berries—to be sure they required much sugar to make them eatable, but they were strawberries—and other varieties of the day gave but meagre returns. But matters have changed of late years, and we have several varieties, quite as sure to produce fruit as the Wilson, and fruit of much better quality. No fruit is more affected by the character of the soil than the strawberry. The stiff clay soil on the place of the late Mr. Knox, a few years ago known as the "Strawberry King," gave him results with the "Jucunda," and other foreign kinds, that no one else could equal. The truth is, that certain varieties are best for light soils, and others most suited for heavy soils. If asked to name the best one variety,

without regard to soil, the variety from which one would get fair returns wherever planted, we should say "Charles Downing." This is a far better fruit than the "Wilson," and apparently equally reliable. After an experience of several years, we are safe in saying, if we could have but one variety for family use, it would be "Charles Downing." For earlier varieties, "Downer's Prolific" for light, and "Nicanor" for heavy soils are to be commended. Among later varieties there are, for light soils, "Seth Boyden," "Green Prolific," and "Kentucky." For heavy soils, "Triomphe de Gand," and "Jucunda." Of course there are other claimants for popularity, such as "Col. Cheney," "Monarch of the West," "Great American," and others, which are worthy of trial, but we have given above those which have been tested for several years in a great variety of localities. We advise those about to plant strawberries, as we do those intending to plant vegetables: put in your main crop of well tested varieties, and then try of the newer kinds all you can afford to test. To novices in strawberry culture, we would say, a plant can not bear fruit until it has made one season's growth. If set this spring, and well cultivated, a good crop may be had next spring. If the plants are set in the fall, they give but a partial crop the next spring, and a full one the year following. If runners are struck in pots in June and July, and set out in August, as we have shown in former volumes, then a full crop may be gathered the spring following. For ordinary garden culture, the plants may be set a foot apart in rows 18 inches apart, in highly manured soil—the earlier, the better.

Protecting Plants in Spring.

As soon as the earth ceases to receive heat from the sun, cooling begins. The earth, when the supply of heat is withdrawn, begins to give off heat by radiation—the heat passing off into space, and when the surface becomes sufficiently cooled, the moisture in the air condenses, and we have dew or frost, as it may be. If we cover the surface with a mat, or board shutter, this cooling is checked, and if the mat or shutter is raised up on supports several feet above the earth, no dew or frost is deposited. The earth gives off heat as before, but instead of its passing off into space, it is received by the mat or shutter, and a good part of it is reflected to the earth again, and neither dew nor frost appear upon the space beneath. It is not necessary that the protecting screen be a mat or a shutter, as one of cotton cloth, or even of newspaper, will serve nearly as well. What is true of the effect of cooling upon the earth itself is equally true of the plants that are growing in it—indeed, these are more readily affected. When the upper layer of earth cools, the layer below imparts its heat to the upper one, and the cooling goes on slowly. The plants have not this reserve to draw upon, and cool much more rapidly. Even our hardiest plants can not make any growth when the temperature is too much reduced, and though the days may be warm, the loss of heat at night is so great that they remain stationary, while more tender plants, if not killed outright, are so chilled and checked in their growth that they never fairly recover. It is by avoiding these alternations of heat and cold that so much is gained by the use of cold-frames for lettuce and a few other plants, as described by Mr. Peter Henderson, on p. 63, last month. The earth within the frame, and also the plants, receive the sun's rays during the warmer part of the day, but in the afternoon, as soon as the heat of the sun begins to decline, the sashes are closed tight, and mats, or shutters, to prevent loss of heat, are placed over the glass. Our people seem very slow to avail themselves of the great advantages offered by cold frames, and wait for their lettuce, radishes, and early spring vegetables until they can be had in the open ground without aid; and they do not put out their tomato, and other plants, until settled warm weather. These remarks are not intended for market gardeners, who know that if they are to have early crops of any kind, they must "forward" them by every means within their knowledge, but for those who have private

gardens, and who, rarely, by complying with the conditions we have stated, have their spring vegetables, until long after they are offered for sale. The uses of the cold-frame were mentioned last month (besides Mr. Henderson's article) in the monthly Notes about work. Aside from the cold-frame, small frames, or what the English call a "hand-light," and the French, a "*cloche*," or bell-glass, may be made useful in every private garden. Even a frame a foot square and 8 inches high, with a piece of bleached muslin (cotton cloth) tacked over one end, will be found most useful. This, if



HAND LIGHT.

turned over a cluster or "hill" of plants early in the afternoon, and removed late in the morning, when the sun is well up, will often do wonders in the way of helping plants. Even later in the season, while the days are sufficiently warm, the nights are cool, and such a covering is of great use. Try a frame of this kind over a hill of cucumbers, or early squashes, and you will never be without a stock of them. The next step in advance, is to use the frame, but replace the muslin by a pane of glass,—in short, a very small cold-frame. We were led to these remarks by a note from "S. M.," Herkimer Co., N. Y., who sends us a sketch of a "plant protector" which he uses, and which is given in the engraving. Our correspondent writes as follows:

"Its merit consists in its cheapness; a few nails, a couple feet of 1/2-inch board, and a single pane of glass, being all that is required. The glass slides in grooves cut in the sides, and is held in position by the button. By turning the button, the glass may be moved downwards in the grooves, and held at any height by turning the button upward, so that it will press the under surface of the glass, and thus give the amount of ventilation desired. When it is desired to shade the plant, the high board back may be turned toward the sun."

"S. M." gives no dimensions; we have reproduced his drawing just as he sent it. The frame seems too tall in proportion to its width, and any slant greater than 45°, causes a loss of light. What we would impress upon our gardening friends is, the great utility of these small frames, which each one may build according to his notion, as we are sure that when once tried they will not be abandoned. They will be found useful in every garden, early in the season for early lettuce, cauliflowers, etc., and even still more valuable in protecting tomatoes, egg-plants, and other things that get "set-back" during our hot days and cool nights.

What may be Sowed with Clover Seed.

Some two months ago, in making up a circular to accompany the *American Agriculturist* Microscope, we indicated that one of its uses, and an important one to farmers, was, that it would enable them to carefully examine the finer seeds before sowing, and to distinguish the seeds of weeds from those of the crop. In the natural distribution of seeds, it would appear that the scattering of the seeds of weeds was most carefully provided for. But however abundantly these are disseminated by natural agencies, the careless farmer sows them broad-cast by the handful, and does what Nature can not do—he puts them in well prepared soil, where they will be sure to grow. To take an illustration in season. In this very month of March, hundreds of farmers will be sowing their clover "on the last snow," as many try to do. Next summer, or later, we shall have from some of these same farmers, letters and specimens. The letters will be to this purport: "A new weed has appeared in their fields, or meadows, threatens to kill out everything else; what is it, and how shall we get rid of it. It never was known here before this year—where did it come from?" Of course we shall try to answer each inquiry as well as we can. The where did it come from? we can answer now—"you carefully sowed it, that cool March day, with your clover

seed." In writing of the uses of the microscope, as above referred to, and feeling the importance of the matter, we were at considerable trouble, in hunting along roadsides and fence rows, to find some of the troublesome clover weeds, and get a few seeds to make an engraving from. After this had all been

done, we were quite surprised on receiving the "Journal of the (Eng.) Royal Agricultural Society," to find that the Botanist of the Society, Mr. Carruthers, had been

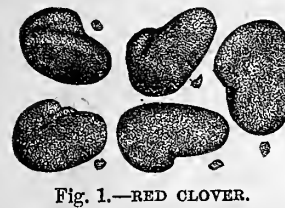


Fig. 1.—RED CLOVER.

at work on the very same matter, and in an article on "Clover Seed and its Impurities," had given engravings of the weed-seeds that are likely to be sown with clover seed in England, showing, magnified, 24 different kinds. It is a curious fact, that some of the most frequent weeds in European fields, do not become established here at all, while others, not especially troublesome there, find here conditions better suited to them, and are among the greatest annoyances of our farmers. Out of the two dozen weeds, the seeds of which are figured in the article referred to, we find hardly a dozen that our farmers find injurious. We gladly avail ourselves of Mr. Carruthers' engravings of these weed-seeds that our farmers should know and



Fig. 2.—WHITE CLOVER.



Fig. 3.—BLACK MEDICK, OR NONSUCH.

avoid, as it allows us to present the matter in time for the present spring sowing. The very general distribution of the *American Agriculturist* Microscope, will allow of the careful examination of seeds before sowing. This is one of those matters that need no argument; if the farmer does not feel its importance, and will not make a careful examination of his seed, if not before purchasing, at least before sowing, when the facts in the case are pointed out to him, no amount of talk will convince him that he should do so. We would not have, in a clover field, a single plant of Viper's Bugloss (fig. 9), for the price of many yearly volumes of the *American Agriculturist*, and its Microscope. Yet it yearly extending itself in several States.

To Examine the Seeds.

The quickest way will be, to take a sheet of white paper, and spread out a small quantity of the seed—say a teaspoonful or so. Then remove the glasses from the Microscope, and using the upper two glasses only, let the lowest glass, and the diaphragm serve as a handle. With the upper two glasses, go carefully over the whole surface of the paper covered by the seeds. First quite familiarize the eye with the appearance of the clover-seed itself. The seeds of all the clovers have a general resemblance, looking, when magni-



Fig. 4.—CHICKWEED.



Fig. 5.—SPURRY.

fied, like distorted beans, as seen in the two kinds most generally sown by our farmers; figure 1 being the Red Clover (*Trifolium pratense*), and figure 2 the White, or Dutch, Clover (*Trifolium repens*). The weed-seeds shown are magnified in the same

proportion as these. While it would be a great misfortune for a farmer to stock his fields with some of the weeds, the seeds of which are here given, other weeds are of less importance, their chief harm being in occupying the ground and preventing the clover from growing. If one buys and sows clover, he does not wish—for example—a crop of Spurry, a useful enough plant in its way. The engravings are sufficiently accurate to allow the seeds to be recognized at sight. Usually the



Fig. 6. The engravings are sufficiently accurate to allow the seeds to be recognized at sight. Usually the



Fig. 7.—OX-EYE DAISY.

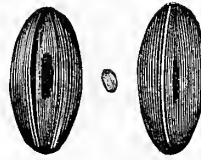


Fig. 8.—PLANTAIN.

natural size of the seeds is shown (by dots, if small) by the side of the magnified figures. Figure 3 is Black Medick, or Nonsuch, (*Medicago lupulina*); the larger cut is the one-seeded pod, and the others the separate seeds. Not a bad weed, but occupies the ground to the exclusion of clover. Figure 4 is Chickweed, (*Stellaria media*), often abundant in moist grounds; not bad. Figure 5, Spurry, (*Spergula arvensis*), a quick growing annual, which will crowd out the young clover. Figure 6, White

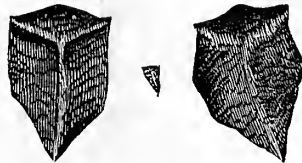


Fig. 9.—VIPER'S BUGLOSS.

Bed-straw (*Galium mollugo*), a sprawling plant 3 feet long, now becoming at home here. Our "White-weed," or Ox-Eye Daisy, is shown in figure 7. Too well known in the older States; careless farmers say it does no harm. It simply prevents the growth of nutritious plants—and that is harm enough. Figure 8 is the Rib-Grass, not a grass, but the Rib-wort Plantain (*Plantago lanceolata*). Is abundant, and in England regarded as a good sheep pasture plant. But the clover-field is no place for it. Figure 9, Viper's Bugloss, Blue-Weed and Blue Devils, (*Echium vulgare*), already too well known in some of the older States—and should be stopped. Its seed, the largest of all these weed seeds, is readily recognized, and one of the very worst of all known weeds. When it takes possession, it comes to stay, and the farmer may step aside. Figure 10 is Self-heal, (*Brunella vulgaris*), of no special importance except as showing slovenly culture. Figure 11 is the seed of our well known Sheep Sorrel, (*Rumex Acetosella*), a sour weed on poor lands. Fig. 12, Common Goose-foot, or Lamb's-quarters, (*Chenopodium album*), altogether too well known, and wherever seen is occupying soil that should be growing something useful. But where is that worst of all weeds, the



Fig. 10. SELF-HEAL.



Fig. 11.

Canada Thistle? some will ask. The seeds of this are not mentioned as occurring in English clover seed, in the article referred to, and we have not seen it in any American samples that we have examined. Still, farmers should be on the look-out for it. In the descriptive sheet that goes with the Microscope is an engraving (fig. 10 of that sheet), showing clover and weed seeds, the long and narrow seed in that group is from an unripe specimen of Canada Thistle. That engraving also shows the seeds of the "Toad-Flax" (*Linaria vulgaris*), which is not included in the list of English weeds, but which is one of our most troublesome, and is spreading with unpleasant rapidity. Sow clean seed, and Canada Thistle and other pests will not trouble. In the Boys and Girls' Department there is something about preserving specimens of seeds, that some of the parents of the children may find of use.



Fig. 12.—GOOSE-FOOT.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

BY FAITH ROCHESTER.

New Neighbors.

I was very much pleased with the first call after I was settled in the last new home. It was evening, and Paterfamilias had just come from his day's work. The tea-tray, with his supper of baked apples, and bread and butter, had been brought into the sitting-room, and his cocoa was keeping warm in a little pail on the sitting-room stove. The little ones and their mamma find it more wholesome to have their light bread and milk supper earlier in the day. I would not have liked to receive a fashionable call just then, or a regular call of ceremony from strangers. But when answering the knock, we found a gentleman and lady who lived near us, but whom we had never before met, dressed in their every-day clothes—the lady with a light shawl over her head, and her knitting in her hand—I was unaffectedly glad to see them, though an unfinished mattress was spread upon the floor. We all sat down at case, and Paterfamilias ate his "little frugal," and we proceeded to get acquainted in very happy our-folksy fashion. I felt that they had accepted us at once as neighbors, and that they had no particular anxiety about the proper time, or form of their call. This is the right way to treat new neighbors, I thought, and I was sure I should "run in" often to see the new neighbor, following her example and taking my work with me.

Getting Away from Home.

Just twice in three months have I entered the next house to see the good neighbor I like so much. Just twice in the same time have I crossed the street to sit down in the house of another friendly neighbor, whose children play with mine almost daily. And that is the best I have done anywhere in the way of neighborly sociability in the meantime.—I don't like it. I did not mean to do so. I never supposed I should come to this. One might almost as well be living back in the woods out of sight and hearing of neighbors. Whenever I do get out from home I hear other people apologizing and explaining why they have not been to this or that place. Mothers and housekeepers find their time fully occupied, and a habit of keeping close at home is easily formed. It is unsocial. It is unwholesome for the woman who keeps so close at home, and for her family. Contact with the world does us good. To brighten our wits and warm our hearts, is the effect of good, honest sociability.

We get tired of the daily routine of household labor. Sometimes it becomes a weary treadmill, where we are driven almost beyond our ability to keep up with the demand. How good, then, is a little rest, a little change of scene. "All work and no play makes Jack a dull boy." This morning I heard a little girl say, "I shall stay in at recess to-day and study my arithmetic, for to-morrow is examination."—"No," I said. "Study your best in school hours, but run out at recess and have a good play spell, and you can study enough better after such a breathing spell, to more than make up for the extra study at recess."—I find the truth of this when I take a little "outing" myself. I love my family better, and I like my work better after having left them for a little while.

But I am not at all satisfied with the conditions of domestic life, which make it so extremely difficult for neighbors to be neighborly. If I did not believe in the possibility as well as the desirability of other conditions, I would say nothing about it. Personal complaints about hard times are foolish while the whole creation groaneth and travaileth in pain, and no one is exempt. But the grand principle of compensation runs through all, so that human conditions are more equal, thoroughly considered, than it seems to the mere surface observer.

Somewhere to Go.

Last summer, in a small country village, I was talking with a young farmer about the Sunday

evening Temperance Meetings. He said he should be very sorry to have them dropped, because he wanted "somewhere to go." I knew what he meant, for I felt the same want myself, though perhaps not just as he did. I wanted to get out among my neighbors, but I had not time for social visiting. These Temperance Meetings were the nearest approach to social gatherings, open to all, which the little town afforded. No village or hamlet should live in such social poverty. A good lyceum, somewhat social in its character, is an excellent safety-valve as well as educator, among the people of a neighborhood. For lack of this, men and boys loaf about stores and saloons, and women and girls gossip in neighboring houses, or resort to "tea fights,"—a name I have heard given to tea-parties. These are not necessarily sinful or foolish, but they seldom satisfy the demands of real sociability. They are quite out of my line of experience and observation for some years past, but I hear of tea-parties, not a thousand miles from here, where fourteen kinds of cake are served, and a lady who provides only seven kinds of nice expensive cake considers herself quite moderate and economical. Sociables and clubs in neighborhoods and church societies, have become quite common, and often prove very sensible and profitable in their entertainments. These, with lectures and concerts, fill the week for some of my readers, so full of social and intellectual pleasure, that they most feel the lack of quiet evenings at home. The problem is—how to mingle socially with our neighbors without encroaching upon peaceful family life?

What to Eat with Our Bread.

A good deal was said, last summer, about "bread and water" as food for the laboring man. I could not help thinking how few people eat bread that is really good and nourishing, and how difficult it is at present to supply ourselves with pure water. The bread that most people eat, can not alone furnish such nutriment as the body (and mind) require to promote their growth and vigor. Even when our bread contains all the elements of the grain needed for our nourishment, it can not alone satisfy the demands of a healthy appetite. We must have something with it, to afford variety, and to give that contented condition to the stomach so necessary for perfect nutrition. Setting aside meat and butter—for most people will supply themselves with these as they are able—let us think of some simple inexpensive dishes which may make our good bread go down more easily, and set more comfortably than it would alone. I have had this to consider a good deal in working for myself and the children, in their father's absence, where no warm drinks were used, and where meat was seldom at hand.

I will stop right here to say that "in the abstract" I do not believe in "fifteen-cent dinners for the laboring man," and his family, nor in pinched supplies that taste of the coppers they cost for any body. I wish that you and I, and all of us, could go, when we are hungry, to a table bountifully supplied with a great variety of nutritious and delicious kinds of food, perfectly prepared and beautifully arranged. And you should take a bunch of grapes and I a cracker, or I a cup of milk, and you a sandwich, or you a bit of beef steak and I a plate of soup, just as we felt inclined. But for most of us this is simply impossible. Mary, who wrote to me for advice about cheap living, is trying to economize in every reasonable way in order that she and her John may ere long have a home of their own. Some of the rest of us live under the shadow of unpaid taxes, or interest on mortgages most difficult to raise. For all of us, economy is a good thing, but those of us who are poor, are often driven to pinch ourselves. So we will not now say a word about canned fruit, or a supply of the most tempting articles of food to be found in the market. Just here we will only consider what inexpensive dishes we can eat with our bread to make a good meal, besides meat or butter, or milk or tea, or coffee. Among vegetables, first comes the potato. But if simply boiled or baked, it becomes itself

only a part of the back-ground (so to speak) of the meal, and it also needs something—meat, butter, or milk—to go "with it." When warmed over, and seasoned with butter or cream, and salt, it will do for a kind of sauce; also, when mashed, and well seasoned, or when made into potato pudding. Indeed, the potato seems almost indispensable as a part of a warm dinner, for all of the other vegetables relish rather better when a little simple potato goes with them. Sometimes this every-day vegetable must be omitted. Mashed turnips or squash, cabbage chopped and cooked with milk, onions boiled an hour (or thereabouts) with a milk or cream

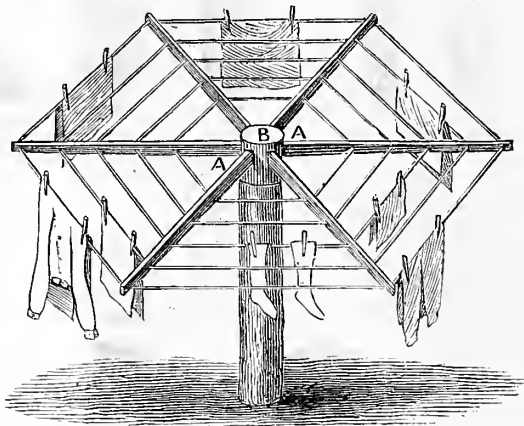


Fig. 1.—REVOLVING CLOTHES DRYER.

gravy made with them after the water is poured off, or onions sliced and cooked for half an hour or more in a covered frying pan, with a tablespoonful of butter and a little salt, salsify cooked with cream gravy, and parsnips cooked the same, or in other ways—all of these, and other vegetables, go to make up a wholesome variety, using only one or two at the same family meal. But every one of them must be thoroughly cooked, and then not one will sit hard on the stomach, or tend to an undue production of gas. Sweet corn, both fresh and dried, helps well to fill the bill of fare. We must not forget beans, which abound so in nourishment. But they must be very thoroughly cooked. For soup they should be boiled about five hours. Seasoned then with cream, or butter, and with salt, they ought to be relished by everybody. However I may have seasoned this soup, my children always wish to add milk upon their plates. Baked beans must either be boiled until very soft before baking, or must be baked a long time—from three to six hours, if not previously very tender—with a good deal of liquid in the jar, or pan. Those who use pork at all, usually put a piece of fat salt pork in the dish of beans prepared for baking. But some of us very much prefer a seasoning of cream or butter. Split-pea soup, or common unsplit dried peas, boiled five or six hours without meat, is very nutritious, and much liked by many. I season it with salt, and cream or milk if I have it—the more the better—otherwise with butter.

I have said nothing about fruit sauce, but there is a demand for variety in the Topics as well as in our meals, so I will change the subject at present.

A Good Dish for an Invalid,

warranted not to injure the well. Crumb crackers into a bowl—more or less, according to the size of the crackers. Pour boiling water, sufficient to soak them, over the crumbs. Break a fresh egg, and add quickly, stirring the whole rapidly. The boiling water cooks the egg. Season according to discretion, with salt, pepper, cream, or butter.


Some Out-Door Conveniences.

Mr. L. D. Snook, Yates Co., N. Y., who has in former volumes given a number of ingenious and useful in-door contrivances, for facilitating the work of the housekeeper, now sends two, which, though properly belonging to the household, are for out-door purposes. One of these is

A Revolving Clothes-Line.

In towns and villages, where space must be econ-

omized, and where the demands of the garden will not allow of a wide space for the clothes yard, some contrivance for drying clothes within a small area becomes necessary. Various devices, in the way of clothes' driers, have been invented and patented, but they are not essentially superior to the quite old one here given. This is designed for the regular family washing, and is to be set up in a convenient place in the yard. Any one of fair ingenuity can contrive a similar affair, to be used in a spare room in winter, in times when clothes will not dry out of doors. This revolving clothes drier, shown in perspective at figure 1, may be easily made by any one handy with tools in half a day, from the following directions:

A wooden hub, B, fig. 1, 8 to 10 inches in diameter, is mortised with 6 holes, for the reception of the arms, A, A, these are from 5 to 7 feet in length, 7 feet being sufficient to hold the washing for a large family. It will be found less work to simply bore 6 2-inch holes in the hub B, and round the end of arms A. Give the ends of these a good coat of paint, and drive them firmly into the hub. Small holes are bored, from 8 to 10 inches apart, the whole length of the arms, excepting for 15 inches of each arm nearest the hub. The clothes line is to be strung through the holes; and a white wire clothes line is preferable, as it will outlast a dozen hemp or cotton ones. The standard, (fig. 2), is simply a common post set firmly in the ground; in the top of this is driven, as a pin-

 Fig. 2.—POST FOR DRYER.
 tle, a round iron bar, 1½ inch in diameter, and left projecting 6 inches; this of course fits into a hole in the hub. Holes in the hub should be so bored that the outer end of each arm will be from 8 to 12 inches higher than the hub. When hanging out clothes, so soon as one section is filled, revolve the line a few feet, and when that is filled, continue the operation; by this plan there is no traveling from 50 to 100 feet along the line in the snow, wet grass, etc., as by the old method.... Dust and mud are two of the terrors of the neat housekeeper. We have sometimes thought, if a part of the labor devoted to dusting and sweeping, to get these unwelcome guests out, were devoted to prevent them from coming in, the result would be more satisfactory. There is a great difference in men, in respect to "tracking" earth in its various forms into the house; some will always think of, and see to the condition of their feet—or the boots or shoes which cover them—while others, no matter how many scrapers, mats, and other preventives are provided, will forget to use them. Scrapers and mats are provided at each door, but especially in the spring, when the soil is often wet and adhesive, and many persons pass in and out, these are insufficient, and the scrapings accumulate in such quantities, as to make it necessary to remove them frequently. Mr. Snook sends a sketch of

A Portable Scraper and Mat,

an engraving of which is given in fig. 3; this is a moderately heavy board, about 10 inches wide, and 30 to 36 inches long. Near one end is attached a stout scraper, which any blacksmith can hammer out. At the other end of the board, and well out of the way of the scraper, is a coarse mat; this may be of "Coir," or cocoa-nut fiber, such as are sold in the stores, or the domestic husk-mat, but whatever

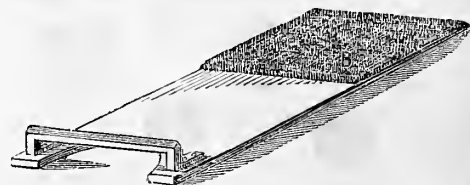


Fig. 3.—PORTABLE SCRAPER AND MAT.

kind is used, it should be one that will stand hard usage, and well fastened to the board. A very good mat for this use may be made by boring inch-holes at regular intervals in a board, drawing through them tufts of doubled corn-husks, so that

the ends will all be at one side, and then shearing off the ends of the husks, fairly even, but not too smooth. A board thus stuffed with husks, and nailed to the one that holds the scraper, would answer. A scraper and rough mat being provided, as here represented—and there should be several of them—they should not be placed at the house, but where they will be used at some distance from it. Almost every farm-house is surrounded by its garden, or front-yard, and in these the walks are, or should be, in good order. Such a scraper and mat should be placed where the men leave the fields or the barn-yard, and enter the better kept surroundings of the house. If these are placed where they may be used, at some distance from the house, it will prevent much mud from being brought to and accumulating on the piazza and steps, and the "thickest of it" being removed by these, the foot-cleaning contrivances at the house will serve for finishing, and be kept in better condition.

Strong Button Holes.

Mothers who sometimes buy cheap ready-made garments for their families, or who "put out" a part of their sewing, are often annoyed by the weakness of the button holes, which break out on very slight provocation. In making button-holes on drawer bands or aprons, or where they are likely to get torn out, I strengthen them before working the edge, by sewing a long stitch from one end of the slit to the other, on each side, sewing a stitch several times across the end where the strain comes. This is more important than the use of a very coarse thread without these strengthening lines. Tailors have another way of strengthening their button-holes on cloth, but I am not now competent to give their process—exactly. I am only thinking of the little garments to be worn by children who turn summersaults, climb trees and fences, and chase and catch each other. F. R.

Avoidable Misery and Deaths.

Not a cheerful topic, but one that it is our duty to treat. We have hardly looked through a paper for several months, without finding a notice of serious burning or death, from the careless use of kerosene. Did all these casualties occur in one place, and within a few days of one another, the account would be more appalling than that of the yellow fever in a Florida city, or of a battle in Turkey. As they are scattered here and there, but little heed is paid to them—yet the aggregate of kerosene accidents is frightful, and what is the most distressing feature, they are all avoidable. A large share of these accidents—so-called—result from the use of kerosene in kindling fires. Bridget finds the wood is damp, or the kindlings do not burn up at once, so she gets the can, and pours on the kerosene—that is usually the last of Bridget. We do not call these accidents—they are wilful self-slaughter. We suppose there is no help for absolute idiocy of this kind. But this is not the kind of danger to which those who read the *American Agriculturist* are exposed. We assume that those sufficiently intelligent to read, will not try to kindle a fire with gunpowder, or with kerosene. But besides these suicidal performances, we find that there is just now an epidemic of lamp explosions. These, while equally avoidable with the fire-kindling catastrophes, are likely to occur with a different class of persons, and now, as long evenings make the use of lamps more general, it is important for every housekeeper to think of this matter. What kind of kerosene are you using?—It is not well to trust altogether to the storekeeper; it is a matter of quite too much consequence to be indifferent about. There is danger, and great danger, in poor oils; with good oils there is no danger—provided ordinary care be used. The light oils give just as brilliant a light as the heavy ones, they are much cheaper—but you use them at a fearful risk. The names of certain makers, such as Pratt, Devoe, and others, are a guarantee of the safety of their oils—provided they reach the consumer as they left the

factory. Any oil that gives off an inflammable vapor at a heat of less than 110° is unsafe; this is the lowest that should be tolerated, and the best oils will stand the test of 150° or more. It is a matter of vital importance—of life and death—and it is an imperative duty of all housekeepers to see that they are furnished with safe oils. If the person with whom you deal can not furnish them, go to the next town, or elsewhere, until they can be found, and in the mean time use tallow dips, or anything but cheap oils. If nothing better can be done, let two or three neighbors combine and send for a barrel of some reliable brand, but under no circumstances use unsafe oils for a single night. Lamps never explode, the vapor of unsafe oil does, and will, somehow, in spite of every lamp. No matter what the kind of oil, never fill a lamp while it is lighted, and even with the best oil, be as careful as if it were unsafe.

BOYS & GIRLS' COLUMNS.

An In-Door Game with Marbles.

BY L. D. SNOOK, YATES CO., PA.

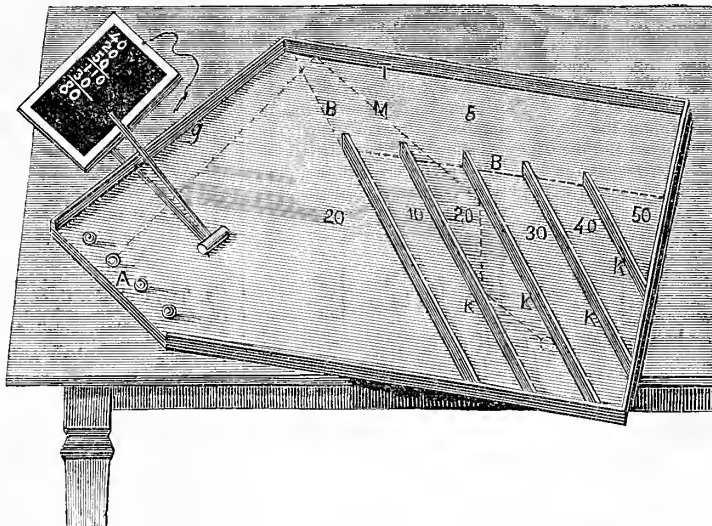
[Here, youngsters, your friend, Mr. L. D. Snook, comes around again; this time he has a game to be played with marbles in the house—in fact, on a special table, but a table so simple that any boy who can use a saw can make one. I generally try all such things before I give them to you, but I have not had time to try this, and I am very sure that Mr. Snook would not give you anything that was so difficult as to require more than fair skill—though he says that it takes skill and practice to play it well.—THE DOCTOR.]

The game requires a board, which is made from a piece of stuff, 14 inches wide and 18 inches in length at its longest part. A thin wooden strip is nailed around the edge, except at a space of 6 inches at A, where four marbles are placed in small indentations in the board and one inch from the edge. Five strips, K, K, K, K, K, one-quarter of an inch thick and half an inch wide, and from 4 to 9 inches in length, are glued or tacked upon the surface of the board at the angle shown—the spaces between these division strips are numbered from 10 to 50, as shown in the engraving. Besides this, are required a small mallet and a slate for keeping the account of the game. To play the game, each marble is struck in succession by the mallet in such a manner that it will strike the end strip, S, or side strip, T, and rebound at an angle and enter one of the numbered division spaces. Each marble is struck in succession, and all are to remain upon the board until the last one is struck. A marble coming at rest in the division marked 30, is to be counted so many off, or should it be so unfortunate as to stop in the open space marked 5, or the playground marked 20, they also must be counted off—thus the player will find that it is skill and not luck that wins. The dotted lines, M, show the course a marble will take when struck by the mallet. A large number can play at this game, each one having a shot at four marbles, the count of each person, with the discounts, being kept on a slate or piece of paper.

Aunt Sue's Chats.

HORACE.—"The seven wise men of Greece" are supposed to have lived in the fifth century before Christ. Their names are Bias, Thales, Chilo, Pittacus, Solon, Periander, and Cleobulus. The reason of their being called "wise," is given differently by authors, but the most approved accounts state that as some Coans were fishing, some strangers from Melitus brought whatever should be in the nets without seeing it. When the nets were brought in they were found to contain a golden tripod which Helen is supposed to have thrown there. A dispute arose between the fishermen and the strangers with regard to whom it belonged, and, as they could not agree, they took it to the temple of Apollo, and consulted the priestess as to what should be done with it. She said it must be given to the wisest man in Greece; and it was

accordingly sent to Bias, who declared that Thales was wiser, and sent it to him. Thales sent it to another, and so on until it had passed through the hands of all the men distinguished afterwards as the "Seven Wise Men;" and



A GAME TO BE PLAYED WITH MARBLES.

as each one claimed that the other was wiser than he, it was finally sent to the temple of Apollo. I suppose these gentlemen were known to be wise because they, themselves, believed in their own ignorance, and "much wisdom teaches how little mortals know."

RAISING CANARIES.—IRENE B. asks: "Will you please to give some information as to the management and the treatment of canary birds?"—If you want to mate a pair of canaries, let them be side by side in separate cages for some time before you put them together. When you do place them in the same cage, don't be surprised if they quarrel a little at first. As soon as they appear to be acquainted, put some tow and lincn ravelings into the cage, and let them make their own nest. Keep the cage where the birds will not be disturbed. If you find that the eggs,



1. HOME-MADE PHOTOGRAPH FRAME.—See next page.

after being laid, disappear, (the birds often eat them,) take them away one at a time as they are laid, and place them carefully in cotton, giving the bird some imitation eggs in her nest. The nest-eggs may be of chalk, wood, or even of white wax, and are to be kept in the nest until she begins to sit steadily, then remove the sham eggs, and replace the real ones. When the young birds appear, give them, for food, boiled and mashed rape seeds; egg, boiled hard, and bread crumbs, all thoroughly mixed to-

gether. The parents will feed them. I presume there are books on the subject which would give you more elaborate information, but perhaps the above will suffice.

A HOME-MADE FRAME, for imperial photographs, (or other small pictures,) has been contrived by some clever person. It is made of white perforated card-board, and appears as in figure 1, on p. 105. Cut the card about 9½ inches long, by 7 inches wide. Cut out the center 5 in. long by 3 in. wide. Figure 2, which shows a corner of the frame, will give you an idea of how many holes to leave around the different squares. After cutting out the frame, overhand the edges (as shown in fig. 1) with floss-silk, of any color you choose. I prefer brown or maroon. The figures are all worked with the same shade of silk.

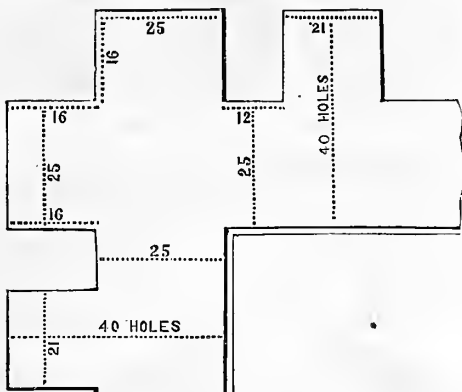


Fig. 2.—CORNER OF FRAME.

Of course you can vary the pattern of embroidery to suit your taste, and you can use split zephyr if preferred. When finished, fasten your picture securely to the frame by a few sly stitches of the silk, hidden in the embroidered figures, and sew ribbon, of the same color as the silk, at the upper corners, by which to hang it, as shown in fig. 1.

Jos. H. B.—No one sent me an answer to the "more difficult puzzle." Thanks for your excellent charads.

Thanks for letters, puzzles, etc., to Fanny Bond, Nemo, Bob O'Link, Gus, Ettie Newbury, A. Sinclair, J. Bellis, and others, whose favors I hope to answer at some future time.

Aunt Sue's Puzzle-Box.

[The Microscope crowds the Puzzle Box this time, but we have something quite new and good for next month.]

We have not had any *arithmorem* puzzle in a long time, and as they sharpen the wits both in their construction and in their solution, I propose to introduce them again. They are based upon the Roman numerals, which are represented by letters, and as they are not mentioned in all dictionaries, I will give a list of them here. You all know that M stands for one thousand, D for five hundred, C for one hundred, L for fifty, X for ten, V for five, and I for one, but many of you do not know that A also stands for 500; so I will give you the list alphabetically:

A=500.	G=400.	N=900	T=160.
B=300.	H=200.	O=11 & 0.	V=5.
C=100.	I=1.	P=100.	W=55.
D=500.	K=250.	Q=500.	X=10.
E=250.	L=50.	R=80.	Y=150.
F=40.	M=1000.	S=7.	Z=2000.

All the above letters were used by the Romans, to represent the figures attached, except W, which we have credited with 55, because it is two Vs.

Now let us write the word VEX with the numerals—525010. That is simple enough, but 10 does not always stand for X—e. g., 1000801604005010 ends with 10 and stands for *portfolio*. Then you may put in an 8 to stand for "ate," and 4 for "for," 2 for "to," etc.; thus—429008—"fortunate." With these instructions, I think you will have no difficulty in solving the following simple ARITHMOREMS.

1. 10050090050050250.
2. 100008016050050.
3. 1750500900500.
4. 71100010050250.
5. 50016010500.
6. 100111900160.
7. 1010715250.
8. 100002507.
9. 10015150.
10. 20000100.

ALPHABETICAL ARITHMETIC.

DEAD AND BRANDED (EVILAR AARAT

I ERA

DEAD

DTNIN

NRVLA

DVLVD

DTBVR

V L I E

L T D I

A L N B D

A B V D D

A A N T

DOESTICKS' FRIEND.

DROP LETTER PUZZLE.

Add six letters (in the blanks) and make one word of the following:

— O — N — E — P — — I — — E.

CROSS-WORD.

My first is in treasure but not in gold,
My next is in ancient but not in old,
My third is in beauty but not in fori,
My fourth is in thunder but not in storm,
My fifth is in feature but not in face,
My sixth is in kindred but not in race,
My seventh is in glare but not in sun,
My eighth is in play but not in fun:

The letters you'll discover—
If properly you seek—
That give the name of something
We mention every week.

DIAMOND PUZZLE.

1. The end of a thief. 2. An epoch. 3. A color. 4. Contests. 5. Timorously. 6. A disagreeable trait. 7. Splendid. 8. Foreign. 9. A crevice. 10. A viper. 11. Part of a house.—The center letters, perpendicular and horizontal, name that which is the cause of many an unhappy household.

PI.

Diper si na gravexatant iponino forou now thinrowses:
nativy si na direnation seerid hatt thoser hudlos hares
ahht onlompi.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

PI.—The soul that suffers is stronger than the soul that rejoices.

ADDITION OF FRACTION.—Take the necessary letters from the words (1) attire, (2) bayberry, (3) communicate, (4) confascatory, (5) likely, and (6) illustrate, and make "Try your skill."

NUMERICAL ENIGMAS.—1. For wisdom is better than rubies; and all the things that may be desired are not to be compared to it. 2. Bacchus is the god of wine and Venus is the goddess of love. 3. Grindstone. 4. Androscoggin.

ALPHABETICAL ARITHMETIC.—Key—"Golden Harp."

CONUNDRUM.—It became a statuette (statue—wet).

CROSS-WORD.—Washington.

TRANSPPOSITIONS.—Name, mean, mane, amen.

HIDDEN RIVERS.—1. Po. 2. Thames. 3. Obe. 4. Red. 5. Ohio. 6. Pearl.

SQUARE PUZZLE.

(Diagonal—Bridget.

Blanche
ERastus
Phillis
ObaDiah
BeniGua
Ezckiel
Harriet

RHOMBUS PUZZLE.

(M, at, cap, apes, wines, rite,

lop, no, Y.)



Send communications intended for Aunt Sue, to Box 111, P. O., Brooklyn, N. Y., and not to 245 Broadway.

Our Young Microscopists' Club.

Well! "The Doctor" is now fairly set up in business! Here is a lot of letters all about microscopic matters. I wish there were ten times as many, for if you think you are all to learn something from me, and I get nothing in return, you are mistaken. Every letter from boy or girl, that tells me of some difficulty, or asks me a question, is very likely to teach me something, and though they call me an "old man," I am not yet too old to learn. So come on with your letters. But first I will attend to those letters that relate to

THE MICROSCOPE ITSELF.

In sending this instrument to tens of thousands, and I should not be surprised to know that, by the time you get this, a hundred thousand had been sent out, it will go into many hands that had never seen anything of the kind before, have no idea of its uses, and how to use it. At the request of the Publishers I wrote the circular or description that goes with each Microscope, and in that stated that "patience" was needed on the part of those who should get it. Now let me give you all one bit of advice. In all the thousands who have had the Microscope, a few—and, considering the number, a very few—as it is only 3 or 5, in the whole, found that they could not see anything with it. On examining into the matter, we found they had not read the directions and that

THE TROUBLE WAS WITH THE DIAPHRAGM.

You know that there are three lenses or glasses, one above another, each a stronger magnifier than the one above it. Between the second and the third, or lowest glass, is what is called a *diaphragm*, i. e., a piece of the same material in which the glasses are mounted—hard

rubber—with a small hole through it. When you first get the Microscope, turn this to one side, and learn the use of the glasses *without this*. It is very useful when you are examining the very smallest objects, but at first it bothers persons who have not yet learned the use of it, which is to make the field smaller, and allow you to see more distinctly very small things. At first you should try the upper or weakest glass, and then the others as advised in that circular. After a while, when the Microscope is as familiar to you as your scissors or jack-knife, you will then get the hang of it, and find the diaphragm very useful. Now here is another matter to be considered. You must know that whether in

A MICROSCOPE OR A TELESCOPE,

the important part is the glasses. We could have sent at a cost of \$3, or \$5, a microscope with several mechanical features which this has not, but the object was to send, at a low cost, a useful instrument that every one could afford. I have been, from a boy, in the way of using microscopes of various kinds, and I know that I could not get a *single good glass* at the price at which this, with *three glasses* mounted on a stand, comes to you. In the sheet of description that goes with the Microscope, there is pointed out a fault.—That is,

THE UPRIGHT OR WIRE STANDARD

on which the glasses slide, is in the way. This was seen at first, but to remedy it in the making, we should be obliged to about *double the cost*, and this we chose to avoid, preferring to give the Microscope at a low price, and point out this difficulty—which can be easily avoided by care. I had thought of a plan of overcoming this trouble of having the wire standard always in the way, but a correspondent at Springfield, Mass., "Mr. O'Ray," sends us a better one, and one which any person with a little ingenuity can adopt. Indeed, having these glasses—which, after all, are the important and the costly part—you can make various improvements, as I shall show from time to time. This improvement, which I will call

AN EYE PIECE FOR THE MICROSCOPE,

can be made by any one who has the least ingenuity. The materials needed are: a piece of brown paper, paste, a bottle cork, and some ink. The tools are: scissors, a sharp pen-knife, a piece of strong thread, an awl, and a stick. In the first place whittle your stick smooth, half an inch through. Cut your brown paper, according to its thickness, into a strip one inch wide and 18 inches or two feet long. You wish to make a tube of this paper, so you will paste it well—good stiff flour paste is best, but mangle or gum will answer—and wind it round and evenly on your stick. It should be about 1/16 of an inch thick, and when thoroughly dry, you will find it very stiff



2.—CORK. 1.—TUBE. 3.—EYE PIECE. Figure 1 shows this tube. To mount it, cut from your bottle cork a slice about half an inch thick, and shape it to fit your paper tube, as in figure 2. Our friend "O'Ray" uses a piece of wood, but I think cork is better. Make a hole with an awl, to allow it to go upon the wire standard of your Microscope, paste (or gum) the concave surface, and put it on your paper tube, as in figure 3, tie it fast with the piece of thread, and let it dry. Now try it on the Microscope, as in figure 4, and if an inch, as here directed, is too long, cut it down by the use of a sharp knife, until the things you have seen without it appear as plain as with it. Most eyes will be suited at an inch from the glass. Having it all right, then blacken the whole with ink, and if you have no brush to use for the purpose—recollect that young microscopists must learn to use make-shifts; wind a bit of small twine, or strip of rag, on the end of a match, or other stick, and use this swab to paint it inside and out. If after drying it is not black enough, swab the ink over it again. Boys and girls, let's give Mr. O'Ray our thanks....Here is another matter



Fig. 4. MICROSCOPE WITH EYE-PIECE.

ABOUT THE MICROSCOPE

that I am sure will interest a great many of you. You saw in the paper that goes with the Microscope, that I told you how to mount it, for convenient working, upon a cigar-box. Now comes Mr. R. M. Bailey, of Middlebury, Vt.—who is editor of the "Middlebury Register," and who knows all about microscopes, has a very powerful one, and who finds the *American Agriculturist* Microscope of great use in preparing objects for his fine costly instrument—who tells us something that many of you will like to know and copy. You know that with our Microscope as it is, you must, to see *transparent* objects, hold it up to the light. Mr. B. mounts his microscope upon a cigar-box as there advised (fig. 5), but just under where

the glass stage of the microscope comes, he bores an inch hole (D). Then in the cigar-box, he places, as

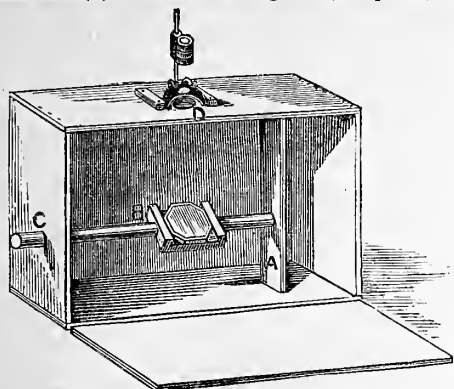


Fig. 5.—MR. BAILEY'S CONTRIVANCE.

you see in figure 5, a mirror (B), so arranged that it can be turned to any angle, to reflect the light,

WHETHER DAY-LIGHT OR LAMP-LIGHT,

up through the hole in the cigar-box, and through the glass stage of the microscope, and thus allowing all transparent objects to be seen as the microscope stands, without holding it up to the light. You see how he has done it.—He turned a round stick, left a piece to hold the mirror, and worked that

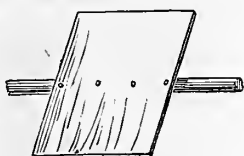


Fig. 6.—BOARD FOR MOUNTING MIRROR.

out afterwards with chisels. He put a standard upright (A) in the box; one end of his piece which holds the mirror goes into a hole in this standard, the other (C) through a hole in one end of the box. But you who have no turning lathe must have something simple. Whittle a round stick that will go quite through the cigar-box, and project half an inch at each end. Make a flat place on the middle of the stick; upon this tack, or with small nails, attach a thin piece of stuff, such as the cigar-box is made of, as in figure 6. Get your mirror; any piece of looking-glass will do, and if you can't get it cut to just the shape you would like, never mind.

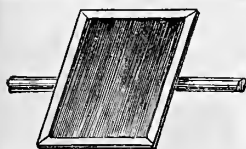


Fig. 7.—MIRROR MOUNTED.

Fasten your piece of looking-glass to the board on the round stick by means of strips of paper and paste, if cut square, as in figure 6, but if you can't cut it, fasten it on somehow by bands and strips, as in figure. All you want is a piece of looking-glass that will throw light up through the hole in your cigar-box, that will allow you to see transparent objects with the Microscope as it stands there. Figure 5 shows Mr. B.'s neat arrangement, figs. 6 and 7 show how to fix a regular bit of looking-glass, if you can get one, and figure 8 hints at an irregular bit. Only recollect that you wish to put a reflector at any desired angle, and keep it there, and you will do it somehow. Remember it is not those who have the most costly instruments that learn the most, and one great use of

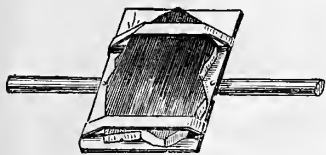


Fig. 8.—ROUGH MIRROR.

the *American Agriculturist* Microscope will be to put you up to contriving things. You know that those in any peculiar occupation have their own terms; so, Microscopists talk about things which others will not understand. They will talk about "preparations," "slides," and "mounted slides." You look at something which interests you, no matter what it may be—a small seed or a minute insect, or the part of one, and you wish to prepare this so that you can look at it again—and in this you will find much of interest in the Microscope—you would like to put it in some shape that will allow you to show it to some one else, it may be to-day, but more likely days, or weeks, from now. Anything put up or prepared to be kept and examined at some future time

IS CALLED A PREPARATION OR MOUNTED OBJECT.

It may be some simple thing, or it may be some dissection or part of an insect, that you have spent hours upon. Now I come to this matter of "preparations," knowing that there are many difficulties, but I will try to make it as plain as possible; besides this, it is a matter on which considerable money may be expended, and I must keep that in view too. In fact, those who will wish to go to much expense, will have a more costly microscope than

ours of the *American Agriculturist*, and will be able to get some of the many books on the subject.... So to begin with the simplest kind of preparation. But in the first place, let me tell you that my microscope talk has run over into the old-folks' part of the paper, and you will find on page 103 a talk about clover seeds, and the seeds of weeds that may be mixed with the clover, which you may care to look at, especially as on the circular that goes with each Microscope, something is said about clover seeds. But

TO GET BACK TO OUR PREPARATION.

You have seen the seed of Red Clover, and of White Clover, under your Microscope, and you would like to be able to tell one from another, and these from any other clover or any other seeds. You might keep a little sample of each done up in a paper, or what would be neater, in a little pill-box, which, as apothecaries have but little use for the very smallest size, you might be able to get very cheap from your apothecary. But in either case, you would have to get at your seeds, open the box, to put the seeds on the stage, and it would be a long job and a great deal of trouble. How much better it would be to have the seeds that you might wish to look at again

ALREADY MOUNTED.

Now to begin with, about mounting, as preparing objects, (meaning anything to be looked at,) let us start with some clover seeds. We have called the squares of glass (made square because they take up less room and weigh less, but would be more convenient if twice as long as wide) slides. We start with clover, or such like seeds, and you will recollect that these are to be looked at as opaque objects—i. e., the light falls upon, but does not shine through them. So you will see from the start that the slide for these need not be of glass. The best material for this purpose will be wood. Use a thin piece—a very thin piece of wood—your cigar-box wood—a piece of stiff veneer—anything that is thin, and not clumsy. It is well to start with a size, and as microscopists have, for their powerful instruments, found that one by three inches is a convenient size, we may as well have ours of that size. So get out some wooden slips 3 inches long and 1 inch wide, and of any wood you choose, worked thin. I say "some," because it is well always to have a lot on hand, to mount other seeds that may come along. Having your wooden slides ready, you will then want

SOME PASTE-BOARD SLIDES

of just the same size. Any stiff card-board will do; old boxes may be put to good use, and you will want—recollect that we are to use them for seeds—slides of different thicknesses. Well, having your paste-boards of the size of your wooden slides, you will need to make a hole in the paste-boards. This hole may be $\frac{1}{2}$ an inch across, or of that of the size of the "cell" which comes with the Microscope. Now about cutting these holes: If you have a brother, or a neighbor who uses a gun and has a "patch cutter,"—which is a sharp steel ring, that with a blow, will cut a neat circle out of your paste-board slides—you can borrow that. If not, use the cell, mark through it on



Fig. 9.—WOODEN SLIDE.

your paste-board slide with a pencil, and then cut the hole with a sharp pen-knife. If there is a rough edge, rub it down with something smooth. Having your wooden slide (fig. 9) and your paste-board slide with the hole through it, (fig. 10), then stick them together, with flour paste or mucilage, and put them under a weight—so that the paste board will not curl, until dry. But we are not through yet. We must blacken the slide. As directed for making the eye-piece, use black ink, and blacken the cavity in your slide. Now it will be a very shallow cell, with a wooden bottom and paste-board all around.



Fig. 10.—PASTE-BOARD CELL.

Blacken the whole of this cavity well, and if one coat of ink is not enough, put on another. Having done this, now for your seeds, and this will require some care. Select half a dozen or so of the seeds that you wish to keep, touch the least quantity of mucilage, to the spot, and then put on your seeds, one at a time. Here you will find the little forceps, mentioned in the circular, come into good service, but with care, and a small knife, you can manage without those. Let the mucilage holding the seeds in place in the cavity of your slide dry. You then will want to finish the mounting. Take a piece of any rather stout paper, white or any color you choose, of the right size, to quite cover your slide; make a hole in this, to correspond with the hole in the paste-board. Cover the wrong side with paste, or mucilage, putting it on neatly, and let it dry. You will now have a strip of wood, a strip of paste-board with a hole in it, forming a cell, in which



Fig. 11.—THE SLIDE COMPLETE.

are your seeds, and all bound together by a strip of paper. Now on the paper you will write the name of your specimen. We will suppose it to be "Red Clover." Write this neatly on one side of the cell, and if you choose you can put a number on the other, (fig. 11). It will take less time to do this, than I have taken to write it, and you have a slide that you can refer to at any time, if you wish to know how red clover looks. In a similar manner you can put up seeds of all the clover weeds which are described in the article on page 103.

When you hear the frogs peep, and the toads sing their spring song, (for toads do sing after their way), it will re-

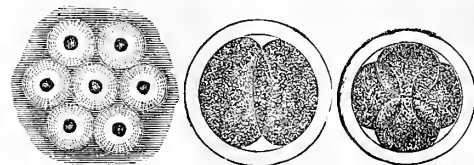


Fig. 12.—FROG-SPAWN. Fig. 13. EGGS. Fig. 14.

mind you to look after their spawn. No doubt that those of you who live in the country know what it is—a mass of very clear jelly, which you can find in almost every pool of water in early spring. This is sometimes called "frogs-spittle," but it is really the spawn of either frogs or toads. Get some of the spawn—you will not want much, a table-spoonful or so will do—place it in a saucer of water. It is a mass of eggs, held together by a clear jelly-like matter. Look at it with the Microscope, and you will see

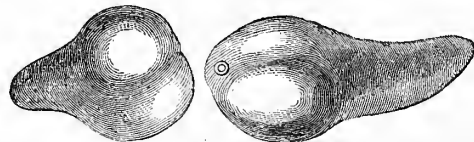


Fig. 15. Fig. 16.—VERY YOUNG TADPOLE.

spots all through it, as in fig. 12. These are the yolks of the eggs, and the interesting portion of the spawn. Keep the saucer in a warm room, near the window, and add water as it evaporates. You will need to look at it every day with your Microscope, taking off a bit and placing it on the slide. You will first notice that the yolk changes its shape, and begins to divide, first as in figure 13, then as in figure 14. The spots also increase in size, so that after a while you can see, without the glass, the form of the young animal, as in figure 15. Soon the eyes appear, figure 16, then a little hole shows where the mouth will be. All this while the animal has been growing, and as it has had no mouth, you are quite sure that it has eaten nothing. All the material for its growth has come from the jelly around it, but now having a mouth, and being able to live in another way, it wriggles about and gets away from the jelly, and swims freely in the water as a

TADPOLE, OR POLLYWOG,

as it is often called. Figure 17 shows the Tadpole as we

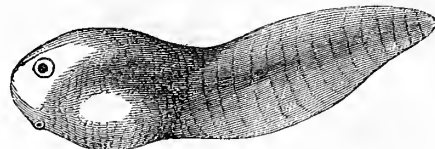


Fig. 17.—DEVELOPED TADPOLE.

generally see it, but if you carefully examine the animal when very young, you will find some curious fringe-like things on each side of the head, as in figure 18. Those are the gills with which the young animal breathes at first, but it soon loses these, as I shall tell you another time. If in going about you find in the pools fresh water snails, take a few home and put them in a jar or dish of water, and you will no doubt soon find little masses of jelly sticking to the sides of the jar. These little lumps, which are not so large as a pea, contain the



Fig. 18.

EGGS OF THE SNAILS,

surrounded by a jelly in a similar manner to those in the frog-spawn. Their changes and the growth of the snails may be watched from day to day, as advised for the others.

As spring advances, you will find new objects on every hand. A pool, or small pond, will furnish many interesting things, of which I shall say more another time.... Keep a look-out for the eggs of insects, some of which are very beautiful.... As the days get warmer, various small insects will be plenty, and you will find the various plant lice worth studying.... If you find upon a twig, or on a stem of grass, as you no doubt will later, what looks like froth, or spittle, take it home and examine it, and you will find it hides an insect.... When the "tags" appear on the alders and hazels, pick them apart, and see that each scale is really a little very simple flower.... I do not think we shall be obliged to give so much space to contrivances again, and we can give all the more to the objects to be looked for.

THE DOCTOR.

The remarkable adventures of Simon Simpson, Esq. His early education had been neglected, he had never skated when he was young, but when he saw people skating on the pond last winter, it seemed so easy, that he determined to try it this year. He bought his skates, and waited all through December and January, at last there was skating in February, and Mr. Simpson started for the pond. How he succeeded in learning to skate, the engravings given below plainly show.



1.—Mr. Simpson starts for the pond. If he lived in New York, of course it was the pond at Central Park.



2.—Mr. S., not having put on skates before, found a quite corner, where he would not be observed.



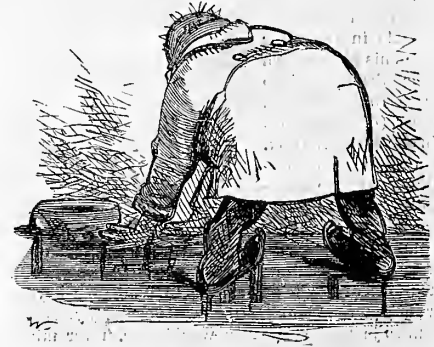
3.—Having, after much trouble, fitted his skates, he tries to stand, but finds it more difficult than he expected.



4.—But after several trials he is able to keep his feet, and he goes ahead on his skates. He enjoys skating, but soon



5.—He has a fall. He is not so young and active as he was 20 years ago, and finds getting up difficult.



6.—Shows one of his attempts to get upon his feet, but he was not very successful, and soon after was as in



7.—Which shows the results of his efforts to get up. He finally thinks skating is not such fun as he thought.



8.—He strives hard to get upon his skates, and assume an erect position—with what result is shown in



9.—Poor Mr. Simpson. Having only treacherous skates to stand upon, what can he do but in



10.—to consider the matter. What can be done? As he is, he can not move, but at last help comes in the form of



11.—A small boy, who takes the troublesome skates off of his feet, and Mr. S. started from the pond, as in



12.—Singing "There is no place like Home."—Moral: Don't put off learning to skate until too late.



Special Notice.

To the readers of the American Agriculturist.

There has been such a quantity of utterly worthless, so-called "silver" goods, palmed off on the unsuspecting public during the past year or two, that it seems almost useless to try to educate the people up to a high standard, or ask them to believe an advertised statement. The business has been so demoralized by unscrupulous manufacturers, who have, in their competition, so cheapened the quality of plated ware that it is the worst possible economy to buy it, unless made by some well-known and honorable manufacturer.

Our goods **WE KNOW** are well and **HONESTLY MADE**, and are guaranteed to be just as represented, or the money will be refunded on the return of the goods. The fact that the publishers of this first-class paper will accept our advertisement, together with the liberal notices from other first-class papers, and the kind words of the large numbers who send second and third large orders, is sufficient to place us in the entire confidence of every one. We have first quality metals, beauty of style and unequalled finish, in all our wares: therefore we feel confident of giving satisfaction in each and every case. The prices given covers the cost of the goods, as well as postage and packing. The solid spoons are the regular 4 oz. spoon.

New England Silver Plate Co.,

Feb. 15, 1878.

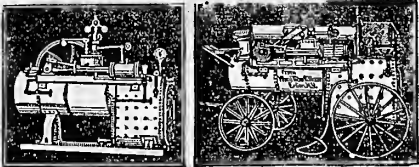
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Kind Words from Customers.

Mrs. Gilbert, of Coventry, Ct., (as well as many others,) write: "The Solid Tea Spoons received, and am very much pleased with them. Please find \$2 for one set knives."

Miss Ellen Whiting, of Franklinton, N. Y.: "Enclosed find \$2 for set of knives. The forks I am well pleased with."

Hundreds of similar testimonials could be given.



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THIRTY-THIRD ANNUAL REPORT

OF THE

NEW-YORK LIFE INSURANCE COMPANY.

Office, No. 346 & 348 Broadway.

JANUARY 1, 1878.

Amount of Net Cash Assets, Jan. 1, 1877, - - - - - \$32,730,898 20

REVENUE ACCOUNT.

Premiums received and deferred.....	\$6,232,394 70		
Less deferred premiums January 1, 1877.....	432,695 40	\$5,799,699 30	
Interest received and accrued.....	2,165,015 85		
Less accrued Jan. 1, 1877.....	800,558 68	1,867,457 17	7,667,156 47

\$40,398,054 67

DISBURSEMENT ACCOUNT.

Losses by death, including additions.....	\$1,638,128 39		
Endowments matured and discounted.....	185,160 12		
Life annuities and reinsurance.....	191,318 86		
Dividends and returned premiums on cancelled policies.....	2,421,817 36		
Commissions, brokerages, agency expenses, and physicians' fees.....	531,526 03		
Taxes, office and law expenses, salaries, advertising, printing, etc.....	501,025 90		
Reduction of premiums on United States stocks.....	\$211,112 72		
Reduction on other stocks.....	12,030 00		
Contingent fund to cover any depreciation in value of real estate.....	250,000 01	473,142 72	5,945,149 38

\$34,452,905 29

ASSETS.

Cash in bank, on hand and in transit, since received.....	\$ 1,216,301 61
Invested in United States, New York City, and other stocks, (market value \$13,379,930 33).....	12,875,584 69
Real estate.....	3,350,268 07
Bonds and mortgages, first lien on real estate (buildings thereon insured for \$13,380,000, and the policies assigned to the company as additional collateral security).....	15,379,202 23
*Loans on existing policies (the reserve held by the company on these policies amounts to \$3,445,195).....	695,234 74
*Quarterly and semi-annual premiums on existing policies, due subsequent to Jan. 1, 1878.....	396,289 26
*Premiums on existing policies in course of transmission and collection (estimated reserve on these policies \$674,000; included in liabilities).....	167,183 37
Agents' balances.....	56,945 97
Accrued interest on investments to Jan. 1, 1878.....	315,895 35

\$34,452,905 29

*A detailed schedule of these items will accompany the usual annual report filed with the Insurance Department of the State of New York.

Excess of market value of securities over cost..... 504,345 64

Cash Assets, Jan. 1, 1878 - - - - - \$34,957,250 93

Appropriated as follows:

Adjusted losses, due subsequent to Jan. 1, 1878.....	\$318,069 48
Reported losses, awaiting proof, etc.....	112,897 84
Reserved for reinsurance on existing policies; participating insurance at four per cent Carlisle, net premium; non-participating at five per cent Carlisle net premium.....	31,022,105 99
Reserved for contingent liabilities to Tontine Dividend Fund, over and above a four per cent reserve on existing policies of that class.....	792,302 22
Reserved for premiums paid in advance.....	17,430 91—32,293,106 44

Divisible Surplus at four per cent, - - - - - \$2,664,144 49

Surplus, estimated by the New York State Standard at 4-1-2 per cent, over.....\$6,000,000 00

From the undivided surplus of \$2,664,144.49, the Board of Trustees has declared a Reversionary Dividend, available on settlement of next annual premium to participating policies proportionate to their contributions to surplus.

DURING THE YEAR, 6,597 POLICIES HAVE BEEN ISSUED, INSURING \$20,156,639.

Number of policies in force Jan. 1, 1876.....	41,661.
Number of policies in force Jan. 1, 1877.....	45,421.
Number of policies in force Jan. 1, 1878.....	45,605.
Amount at risk Jan. 1, 1876.....	\$126,182,119 00
Amount at risk Jan. 1, 1877.....	127,748,473 00
Amount at risk Jan. 1, 1878.....	127,901,887 00
Divisible surplus at 4 per cent Jan. 1, 1876.....	2,499,656 00
Divisible surplus at 4 per cent Jan. 1, 1877.....	2,626,816 00
Divisible surplus at 4 per cent Jan. 1, 1878.....	2,664,144 00

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D. O'DELL, Superintendent of Agencies.

CHARLES WRIGHT, M.D., Residence, 109 E. 26th St. } Medical Examiners.
HENRY TUCK, M.D., Residence, 15 E. 31st St. }

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NEW AND ENLARGED EDITION.

THE most practical work on Gardening yet published. Contains 220 pages closely printed matter, beautifully illustrated with several hundred finely executed engravings and a chromo-lithograph of a group of popular flowers, and a list of upward of 2500 varieties of Garden, Field, and Flower Seeds, with explicit directions for culture. Mailed, post-paid, upon receipt of 35 cents.

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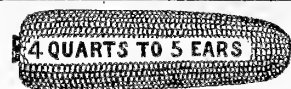
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Price, \$1.00 per lb.; 3 lbs. \$2.50, by mail, post-paid.

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This variety displays great productiveness, vigor, and hardness. It is a beardless, white chaff wheat, with heads frequently 5 to 6 inches long, very closely set with large white kernels, frequently numbering 75 to 80 to the single head.
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TRIUMPH.—A new and exceedingly fine, medium early, red-skinned variety, resembling the Snowflake in appearance and quality. It might with propriety be called a Red-Skin Snowflake.

This variety was exhibited in London at the great International Potato Show, in October last, and received a first-class certificate.

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BLISS' LITTLE GEM.—Numerous testimonials received from those who tested this variety the past season, pronounce it two to three weeks earlier than any other variety. At the great Tomato Trial in London, at the Horticultural Society's gardens, it was the earliest of 60 varieties on trial, and received a first-class certificate. 15 cts. per pkt.

ACME.—This new and beautiful variety is one of the finest ever produced. Its rosy-purple, glossy skin, fine symmetrical form, and delicious flavor, render it worthy of general cultivation. It is also a very early variety, surpassing all others in this respect, excepting the "Little Gem." 15 cts. per pkt.; ¼ ounce pkts. 75 cts.

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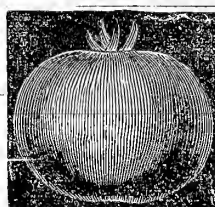
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Livingston's New Tomato, **ACME** Seed Catalogue Free
100 SEED, 25c.
Early, large, smooth, solid, few seeds, ripens even, rich color, delicious flavor.
\$200.00 REWARD: Given to any one producing two better than my Acme and Paragon. See my Catalogue, for such certificates as J. W. H. KILPATRICK, of Ohio, J. A. H. GREGORY, of Mass., H. K. VICKROY, of Ills.

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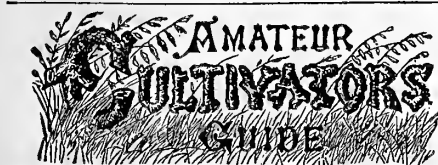
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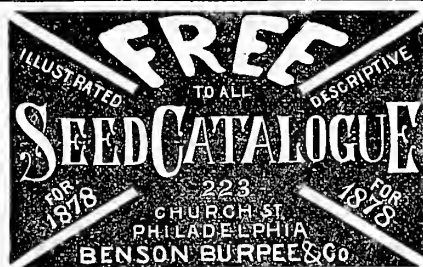
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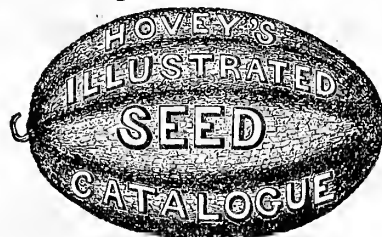
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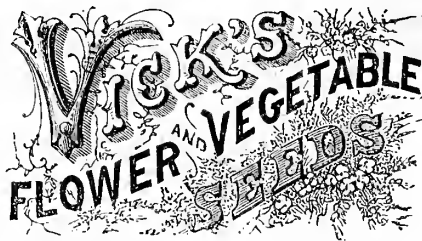
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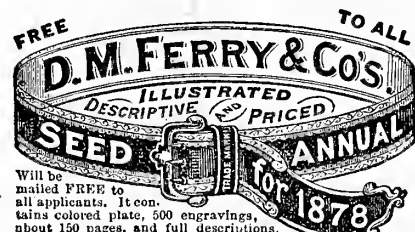


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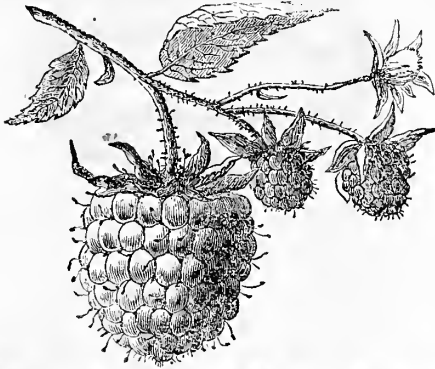
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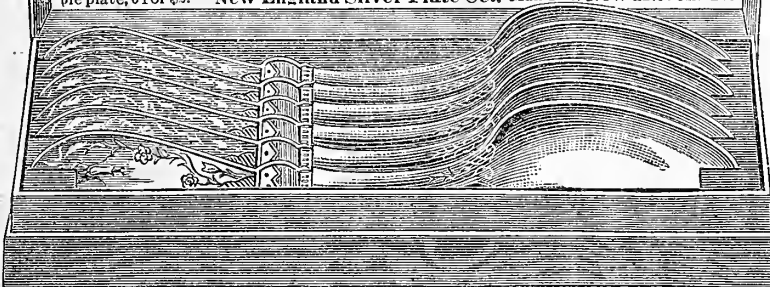
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containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 89.

Quality and Value of Milk.—"T. L. B., Amelia, C. H., Va. On an average, common farm milk will yield about 10 per cent of cream. Milk of this kind sells at the creameries for about 2 1/4 cents per quart, or one cent per pound. A quart of milk weighs 2 2/10 lbs.

When Is a Pig Thoroughbred?—"O. E., Amboy, N. J. Six crosses of pure stock are considered as entitling an animal to be classed as thoroughbred. This gives the animal sixty-three sixty-fourths (63/64) of pure blood. When pigs are carefully bred from well selected boars to this point, and well raised, the breeder may consider his stock as thoroughbred.

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Book on Swine.—"J. W., Talladega, Ala. Coburn's Swine Husbandry is one of the best books on this subject for all practical purposes. Sent for \$1.75, post-paid, by the Orange Judd Company, New York.

Lice on Pigs.—"W. H. G., Stark Co., Ill. Pigs are very subject to lice. The remedy is a very simple one. Make a mixture of equal parts of lard, or olive oil, and kerosene, and rub this on the parts where the lice are gathered; upon the ridge of the back, beneath the arms and thighs, and about the brisket. At the same time give each pig a teaspoonful of sulphur in its feed, every day, for a week or two.

The Southern Cow Pea.—"H. L., Oakland Co., Mich. The Southern cow pea will not ripen its seed in Michigan, but it can be grown for a fodder crop, or for a green manuring crop, to be plowed in. Seed can be procured from A. E. Blunt, Agricultural Station, McMinn Co., East Tenn., and R. H. Allen & Co., N.Y. City.

Swelling on the Leg of a Cow.—"C. C. P., Rock Hill, Ks. A tumor upon the upper part of the leg of a cow may arise from a blow, a bruise, or possibly from a bite by a snake. Such a tumor would swell, suppurate, break, discharge, and heal without any further trouble. The best treatment of such a swelling is to foment it two or three times a day with warm water until it breaks, and after that, to wash it with warm water and soap, and keep the surrounding skin clean. A tumor which arises from scrofula is practically incurable.

Remedy for the Hessian Fly.—"S. G. H., Fredericksburg, Va., says that farmers in that district use 2 bushels per acre of air-slacked lime as a remedy for the fly. The lime should be sown broadcast over the young wheat when it is wet with dew, it is said to be carried down to the eggs, or larvae, and destroys them. As a protection to the face and hands, they should be well greased while the lime is being sowed.

Death of Flora Temple.—Flora Temple, the first of the really great trotting horses of America, died of old age on the 21st December, 1877, aged 33 years. At the time of her death, she was owned by Mr. Aristides Welch, of Philadelphia. She leaves three descendants, a mare owned by A. B. Conger, of New York; a horse owned by Robert Bonner, of New York City, and another horse owned by Robert Steel, of Philadelphia. Her last colt was foaled in 1871, when she was 27 years old.

Farming in the South.—"D. W. P., New York. There are abundant openings in the South for farmers. Corn, oats, wheat, grass, roots, fodder crops of many kinds that cannot be grown in the Northern States, potatoes, sweet potatoes, sorghum, cotton, and several other staple products can be grown there in perfection. But the greatest of all these is grass, and when it is considered that there are green fields, or green fodder, to be had throughout the winter, any enterprising farmer who would locate in a district where grass grows luxuriantly as in East Tennessee, Western North Carolina, and Northern Georgia, could hardly fail to find a promising opening for his labor and skill, and these present one great advantage over any Northern or Western State, in allowing him the whole year for profitable work.

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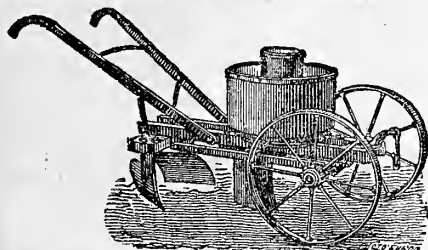


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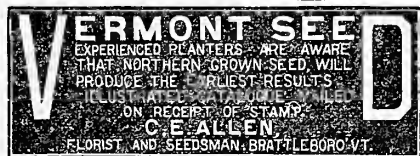
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Strong Plants, your choice, delivered by mail free of cost at your door. Our New Hand-Book of 24 years' experience sent free, with directions for culture of over 1200 best varieties. Centennial medal. Largest assortment. Low prices. All labeled. Satisfaction assured. 61 Roses, all named, \$1; 13 for \$2. HOOPES, BROTHER & THOMAS, Cherry Hill Nurseries, West Chester, Pa.



OUR CATALOGUE for 1878, of 100 pages, printed on tinted paper, containing TWO Elegant Colored Plates and illustrated with a great number of engravings, giving prices, description and cultivation of Plants, Flower and Vegetable Seeds, Bulbs, Trees, Shrubs, etc., will be mailed for 10 cents, which we will deduct from first order. Mailed free to our regular customers. Dealers' Price-list free. Address
NANZ & NEUNER, Louisville, Ky.

50,000 Double Tuberoses Bulbs.

	Doz.	100	1,000
First Quality Large Flowering Bulbs.....	\$.75	\$4.00	\$25.00
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A few hundred EXTRA Large Bulbs.....	1.00	5.00	
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If sent by Mail, 25 cents per dozen, EXTRA. The past season having been the most favorable for the growth of bulbs, we offer the largest and best ever sent out by us.

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Per Dozen, Large Bulbs, by Mail, 75 cents. Per 100, \$1.00.
4 Tuberoses, 2 Gladioli, 2 Cannas, 1 Gloxinia, 1 Achimene, \$1.00. Roses, Greenhouse and Bedding Flowers, at reduced prices. Special Catalogues for Mailing Plants, Roses, etc., free to any address. Also Catalogue of Fruit and Ornamental Trees.
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Camellias, Chinese Azaleas.

RHODODENDRONS, HARDY AZALEAS, Magnolias, and ROSES, all of unusually fine quality.

Fruit Trees and Grape Vines, with a full collection of Hardy Trees and Shrubs, Japanese Maples, and the very latest novelties. Catalogues free, and visits solicited.

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BY MAIL FREE.

To any address on receipt of \$1.00:
5 CHOICE TEA ROSES,
4 ASSORTED VERBENAS,
3 HELIOTROPES,
2 GERANIUMS,
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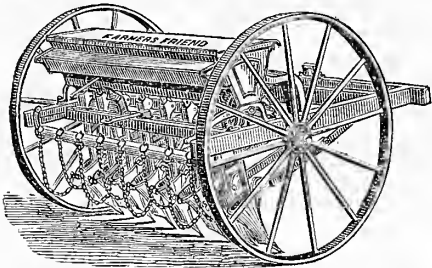
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For 10c. One packet each of Verbenas, Balsams, and Pansies.
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are standard machines, thousands in use; have taken the *Centennial, Franklin Institute Silver, Erfurt, Germany*, and other medals. Sold either separate or combined; the combined tool (*Agriculturist Premium*), is greatly improved for 1878. **PRICES much reduced.** **THE PLANET JR. HORSE HOE**, popular in 1877, is perfected for 1878. Wrought holted frame, polished cast steel teeth, patent clevis, etc. Our catalogue is **FREE.** S. L. ALLEN & CO., No. 229 Market Street, Philadelphia, Pa.

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And Fertilizer Drill.

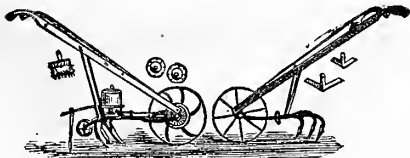
The quantity is regulated with gear-wheels in a **CONE**, so there are no **loose wheels** or **movable feeders**, and it will sow any grain perfectly and accurately.

It has the best **Spring Hoe**, and every Drill has a **Force-Feed Grass-Seeder, Patent Shifter**, and **Surveyor** free.

Illustrated Catalogues, with description, prices, and a **Full Centennial Report**, sent on application. Agents wanted in unoccupied territory. Address, stating where you saw this notice,

FARMERS' FRIEND MANUF'G CO.,
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Rue's Hand Cultivator & Seed Drill.



Send for circulars to **GEO. W. RUE**, Hamilton, Ohio.

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Manufacturer and Dealer in all kinds of **BEE**
KEEPER'S SUPPLIES, Newark, Delaware, for
Price List of Bee Hives, Extractors, Veils, Queens, &c., &c.

The Best Stock & Dairy Farm in Iowa. 1,980 acres. All valley and bench land, with range outside for 10,000 cattle; abundance of timber; fine springs; good mill site; six houses with sheds and corn cribs; all fenced; very healthy; 10 miles from R. R. and competing rates. Price \$15.00 per acre; easy terms. For particulars apply to H. B. SCOTT, Burlington, Iowa.

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A VALUABLE DAIRY FARM of about 300 acres, buildings, water, &c., all in best condition. \$100 worth of milk at wholesale is now sold monthly. Will be sold cheap. For particulars address

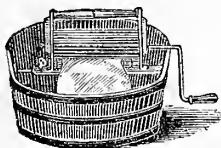
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Hog Island in Narragansett Bay, 1/2 mile from shore, all in one farm of 212 acres. No vermin. Good buildings, large sheep houses. Valuable shore privilege. Price \$85 per acre. Terms liberal. For full information, apply to
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Thousands of Them in Actual Use. They are a Perfect Success. Simple, Durable, and Cheap.

Agents wanted in every town where they are not already being sold. Retail price \$8. Send for circular. Address

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POULTRY, GAME, BUTTER, &c., &c.
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TUCKER'S IMPROVED

Egg Carrier.

The strongest, safest, and best in use, having advantages possessed by no other. Agents wanted.

WM. C. BARKER & CO.,
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Circulars Free. Made by **E. E. LUMMUS & CO.,** Boston, Mass.

Matthews' Garden Seed Drill,

Matthews' Hand Cultivator, Matthews' Drill and Cultivator combined, surpasses all others. Send for circular before you buy. Manufactured only by **EVERETT & SMALL,** Boston, Mass.



PEARCE'S IMPROVED

CAHOON

BROADCAST SEED SOWER.

Sows all kinds of Grain and Grass Seed.

No more sowing too much to the left. Small gate for grass seed. Sows 4 to 8 acres per hour. Does better work than can be done by any other means whatever. Only \$5. Sold everywhere. Send Stamp for circular.

Goodell Company, Antrim, N. H., Sole Manufacturers.

DO YOU

wish to hear about the Monitor Seed Sower? It is radically different from all others, and every way superior to any other. Tested by five years use in Massachusetts, and heartily endorsed by all who have it. Address for circulars **MERRIMAC MACHINE CO.,** Box B, Newburyport, Mass.

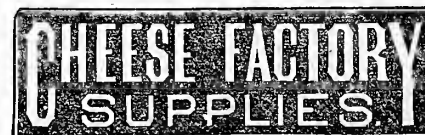
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Over 2,500,000 in Use.

Post's Patent Bucket & Cover Attached



Call for them at your Hardware Stores, Responsible Agents Wanted. Samples, circulars, and terms sent, post-paid, on receipt of 20 cents. Address **C. C. POST, Patentee,** Burlington, Vt.



Portable Engines and Boilers, Vars, Hoops, Presses, Screws, Cans. Every article needed in Cheese Factory or Creamery. Send for Circulars

GARDNER B. WEEKS, Syracuse, N. Y.

"APPLE CORER AND SLICER," CHEAP. A simple and durable. Price 50c. each by mail. For State and County rights. Address **H. W. WILLIAMS & CO.,** Galesburg, Ill.



GOOD MEN WANTED

to sell the celebrated cow fetter. It sells on sight. Warranted to make the worst kicking cow gentle to milk, in three days. There is nothing equal to it for breaking helpers. Retail price \$2. For further information send for illustrated circular to

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Sole Proprietor,
Warren, Trumbull Co., Ohio.

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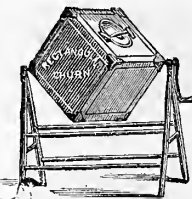
HIGHEST AWARD at the CENTENNIAL.



Cheap, because so well made, durable, and efficient. Nine sizes made, churning from one, to 150 gallons. Warranted to be exactly as represented. Sold by all dealers in really first class Farm Machinery. **PORTER BLANCHARD'S SONS, Concord, N. H.,** Sole Manufacturers. Send for Circulars.

COW MILKER.

I have a **MILKING MACHINE** that will milk any cow in five minutes, clean. Its size is so small that it can be carried in the vest pocket. No more short teats or sore teats by bad milking; no more dirty or filthy milk. It can be used by a small boy; my boy of ten years milked to-day ten cows in less than one hour. I can supply the machine for \$5 each, to those who wish to try it, or it can be seen here at any time. **WM. CROZIER,** Northport, Long Island, N. Y.



The Rectangular Churn.

Simple, efficient, and always reliable. No inside fixtures. Fifty per cent in labor saved over any other churn. Five sizes made. The Highest award given over all competitors at the late Dairy fair in Chicago. An energetic man wanted in every town, to act as agent. One churn sent at wholesale where we have no agent. **CORNISH & CURTIS,** Fort Atkinson, Wis.

Over 5,000 Now in Use.—The Best **MILK COOLER and WARMER** IN THE WORLD

FOR RAISING CREAM.

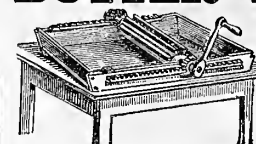
Can make butter all seasons of the year. Will make twenty-five per cent more butter, fifty per cent better butter, with seventy-five per cent less labor, by using the **IRON-CLAD MILK PANS**, with great improvements for 1878. Made for any sized dairy, from five to five hundred cows. Estimates given for furnishing creameries. For Circulars, Price List, &c., address

BUNNELL & BROWN,

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BUTTER WORKER.



The most effective, simple and convenient yet invented. Works 30 lbs. in less than 5 minutes, thoroughly working out buttermilk and mixing the curd. **AGENTS WANTED.** Send for circular.

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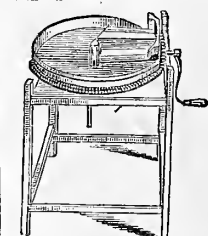
COOLEY SYSTEM

FOR

Butter and Cheese.

All the cream between milkings. No Skimming, no dust, no flies, no spoiled messes. Milk sweet for use after all the cream is off. Send stamp for circular.

Vt. Farm Machine Co., Belkows Falls, Vt.



LILLY'S BUTTER-WORKER

The cheapest and best Machine in the market; no hard labor required. Try it, and see for yourselves. Only \$15 for a thirty pound machine that will take all the milk out with five minutes' work.

HENDERSON & CO.,
316 Race St., Phila., Pa.

BUTTER COLOR.

After fair trials and severe tests it was awarded Centennial Prize Medal. WHY IT IS SUPERIOR TO ALL. 1st. It has no taste or smell, and is as harmless as water. 2d. It is liquid. 3d. It is easy to handle, and is mixed in cream before churning. 4th. It produces a color resembling June Grass Butter. 5th. It is the only article that will color the butter and not the buttermilk. 6th. It gathers all butter materials, increases the weight more than will pay for the color used. It is the best ever known. Send your address on postal card for my receipt book, free. It tells how to make butter, pack, preserve, extract rancidity.

MRS. B. SMITH, 327 Arch St., P. O. Box 1954, Phila., Pa.



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PATENT CHURNS.

Centennial Medal Awarded.

In use over 25 years.

Removable Dasher.

Made of White Cedar with galvanized hoops.

Send for circular and prices.

CLEMENT & DUNBAR,
Philadelphia.

METROPOLITAN AGRICULTURAL WAREHOUSE.

(Established in 1855.)



In addition to a large assortment of useful implements for the Farm and Garden, I have many valuable improvements to offer; among which are the following:
ADAMANT PLOW, with REVERSIBLE SELF-SHARPENING POINT.
 Reversible self-sharpening Point for Regular Plows of following numbers: 18, 19, 19 1/2, 20, 21, Eagle D, 24, D, &c.
 I sell all Plows with this VALUABLE IMPROVEMENT, when so ordered, and at a very small extra cost.
 The NEW SELF-ADJUSTING STEEL TOOTH HARROW, IRON AGE CULTIVATOR, CAHOON'S BROAD-CAST SEED SOWER, TRUE'S POTATOR PLANTER, EUREKA POST-HOLE DIGGER, Reid's Pat. Butter Worker, and Best Level Tread Horse Power.
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HEEBNER'S HORSE POWER PATENT LEVEL TREAD AND SPEED REGULATOR.

Heebner's Improved Threshing Machines. Send for Illustrated Circulars to
HEEBNER & SONS, Lansdale, Mont. Co., Pa.

THE UNION RAILWAY

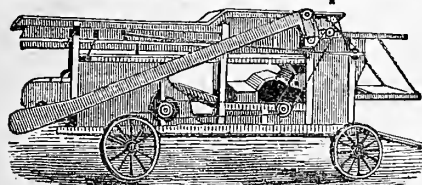


HORSE POWER & Premium Thresher.
 This power produces much more power than other railway powers, with much less elevation.

Send for Descriptive Circular.

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The Birdsell Clover Separator,



SOUTH BEND, IND.

STEDMAN & CO.,

MANUFACTURERS OF
ENGINES, SAW MILLS, SHAFTHING, PULLEYS, and HANGERS. HAY and COTTON PRESSES.

Power Corn Shellers and Cleaners. AURORA, INDIANA.

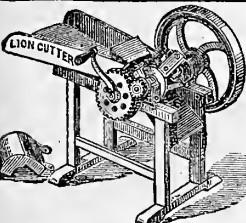
MISHAWAKA FEED MILL

Shells and Grinds Six to Fifteen bushels of Corn per hour. Two to four horse power. Send for Circular. Address

St. Joseph Manufacturing Co., Mishawaka, Ind.

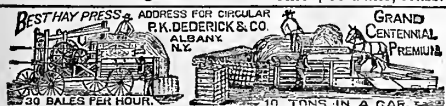
Cotton Seed Huller AND FEED-MILL COMBINED,

For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and throughout the country. Send for Circulars and Judges Report. Pay for itself in a few weeks.
D. KAHNWEILER, 120 Centre St., New York.



Lion Feed Cutter,
 combines the latest and best improvement, and to-day is the most popular fodder cutter in market. Can furnish them with the best safety fly-wheel made, if desired.

Also other styles of leading cutters. Send for Circulars to
Belcher & Taylor, A.O.L. Tool Co., Chicopee Falls, Mass.

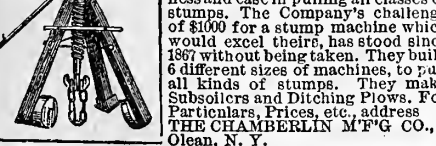


Best Hay Press. ADDRESS FOR CIRCULARS: **R. K. DEDERICK & CO. ALBANY, N.Y.**

GRAND CENTRAL PREMIUM

30 BALES PER HOUR. 10 TONS IN A CAR.

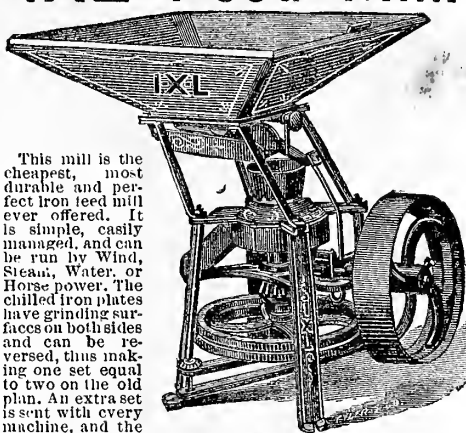
The Chamberlin Screw Stump Machine.



after 10 years test, its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of \$1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Ditching Plows. For Particulars, Prices, etc., address **THE CHAMBERLIN MFG CO., Olean, N. Y.**

RUFUS L. COLE, PRODUCE COMMISSION MERCHANT, 141 Reade St., New York. Established in 1852. Market reports and shipping directions sent free on application.

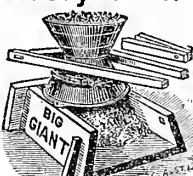
IXL Feed Mill.



This mill is the cheapest, most durable and perfect iron feed mill ever offered. It is simple, easily managed, and can be run by Wind, Steam, Water, or Horse power. The chilled iron plates have grinding surfaces on both sides and can be reversed, thus making one set equal to two on the old plan. An extra set is sent with every machine, and the two sets will grind

Four Thousand Bushels of good Feed. New plates can be had for \$1.25 per set. These mills are built wholly of iron, (except the Hopper), are strong, efficient, and durable. Thousands are in use on Stock Farms—every one giving excellent satisfaction. Every farmer should have one and grind his own Feed.
 Send for Catalogue and Price List to
U. S. WIND ENGINE & PUMP CO., Batavia, Kane Co., Ill.
 Manufacturers of Halladay Standard Wind Mills.

Big Giant Corn Mill, Every Man His Own Miller.



The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully that will grind Shelled Corn fine enough for family use.
 Grinds twice as fast as any other Mill of same size and price.

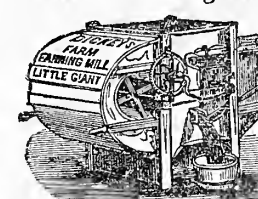
MANUFACTURED BY
J. A. FIELD, SON & CO., 922 N. 2nd St., St. Louis.
A. B. COHU, Gen. Agent, 197 Water St., New York.
ESTABLISHED IN 1844.



BRICK AND TILE MACHINE.

TWENTY YEARS standing as a **TILE MACHINE**, and without a rival as a **BRICK MACHINE**. For circulars address
J. W. PENFIELD, Willoughby, Ohio.

The Best Fanning Mill in the World.

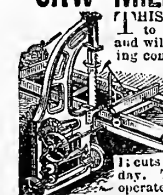


BUY THE A. P. DICKEY Fanning Mill.

No good Farmer can afford to market dirty grain. A moderate quantity of grain, well cleaned, brings a better price than the next grade in dirty condition.

Address **A. P. DICKEY, Racine, Wis.**
A. B. COHU, 197 Water St., N. Y., Agent for New York and Export Trade.

SAW MILL FOR THE PEOPLE.



This patent portable Mowing Saw Mill is adapted to any locality, will saw any kind of logs, and will do as much work (power and bands being considered) as the best Circular Mills. Its frame, head-blocks, and working parts are of the most substantial and permanent kind, being made entirely of iron and steel. It is usually set up and started in from one to two days time. It is generally driven by threshing engines of not exceeding ten horse power. It cuts from 200 to 400 feet of inch lumber per day. The Mill and Engine may conveniently be operated by two men. Send for circular.
INDIANAPOLIS IND. CHANDLER & TAYLOR.

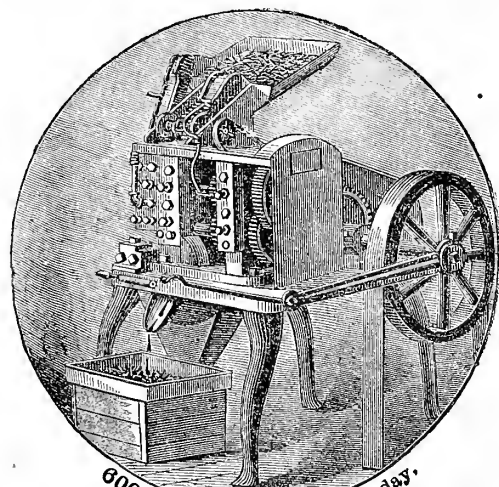
THE

GLOBE NAIL.

THE BEST HORSE SHOE NAIL EVER MADE.

About ten years ago the **GLOBE NAIL COMPANY** of Boston, put on the market the first pointed, polished and finished Horse Shoe Nails ready for driving. Previous to that time all Horse Shoe Nails were pointed, and most of them made, by the shoers in their own shops at the rate of but six pounds per day.

The **Globe Nail** was at once found to be much cheaper and better than any then in use. It soon became so popular that all manufacturers of Horse Shoe Nails were compelled to make their Nails to resemble the **Globe**. For the last ten years it has been the model. Each year the Nail has been greatly improved in quality, and to such a point have we educated the shoers that now they will hardly use a nail unless it is absolutely perfect.



600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

INTERNATIONAL EXHIBITION, 1876.
 U. S. CENTENNIAL COMMISSION.

[BUREAU OF AWARDS.]

PHILADELPHIA, June 23, 1876.

No. 239, **Globe Nail Co., Boston, Mass.**

Horse Shoe Nails, Pointed, Polished and Finished. The uniformity in size, smoothness of finish, hardness and tenacity of the iron, closeness of fibre, and excellence of the head and point, the tensile strength of body, and riveting properties of these Nails, unite in making them of the very highest class of manufacture.

Recommended an Award of Merit.
DANIEL STEINMETZ, Phila., Chairman,
J. D. IMBODEN, Richmond, Va.,
CHARLES STAPLES, Portland, Me.,
G. L. REED, Clearfield, Pa.,
DAV. MCARDY, Aberdeen, Scotland,
T. DIEFFENBACH, Germany,

Group Judges XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

St. Louis, Mo., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. (Referring to a scurrilous advertisement and postal card, disparaging the **Globe Nail**, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.) As I take a great interest in the prevention of cruelty to animals, —horses in particular,—I desire to say a few words in favor of **The Globe Nail**. Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the **Globe Nail** in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say it has no superior in point of Toughness, Shape, and Finish, if it has any equal. I have used about fifteen hundred pounds of **Globe Nails** a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. I know for safety and durability, with a man who understands his business, to drive them, your Nails can't be beat. I am willing to pay, without any suit for all horses that are lamed in my shop by using the **Globe Nail**. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
 (Signed), **P. H. O'NEILL,**

Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary. **P. H. O'N.**

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

GLOBE NAIL CO.

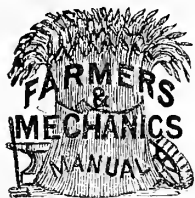
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OUR TERMS ARE THE BEST.
Send for our New Reduced Price List.
THE GREAT AMERICAN TEA COMPANY,
P. O. Box 5613, 31 and 33 Vesey St., New York City.

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BETSEY BOBBET COME AGAIN!
New Book Ready for Agents, by

JOSIAH ALLEN'S WIFE:
SAMANTHA AT THE CENTENNIAL.

Send for Circulars to AMERICAN PUBLISHING CO.,
Hartford, Ct., Cin., O., Chicago, Ill., Newark, N. J.



This is the King of Lightning
Calculators, Ready Reckoners, and
Labor Saving Books. Edited by
GEORGE E. WARING, JR.
It is not a Cook book, but a work
of 21,000 facts and universal ap-
plication, for **WORKING-MEN**
of every trade and occupation.
506 octavo pages, over 600 illus-
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E. B. TRENT, Publisher,
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A New Book for Farmers.

Carrots, Mangolds, and Sugar-Beets. What kinds to raise,
how to raise, and how to feed. By mail, 30 cts. Also my
three works on "Cabbages, and How to Grow Them,"
"Squashes, and How to Grow Them," "Onions, and How to
Grow Them." Full of just such minute details as farmers
want. Each 30 cts., by mail.

My large illustrated seed catalogue, free to all.

JAMES J. H. GREGORY, Marblehead, Mass.

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A book of marvelous beauty and richness in thought, style,
and historic facts. Gives the very cream of Science, making
its thrilling wonders and bright gems household treasures.
Endorsed by the Press and Clergy Everywhere.
TAKE CHANCE for Agents. Sales immense. Sample
Illustrations, Circulars, and Terms **FREE.**
J. C. McCURDY & CO., Publishers, Philadelphia, Pa.

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or the conflict between RUSSIA and TURKEY is the LIVE
book for LIVE agents. Has 700 octavo pages, 100 engrav-
ings of BATTLE SCENES, Fortresses, Generals, etc. Price
\$3.00. Terms unequalled. **AGENTS WANTED.** Address
H. S. GOODSPEED & CO., New York, or Cincinnati, O.

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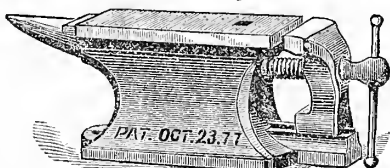
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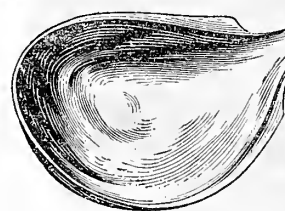
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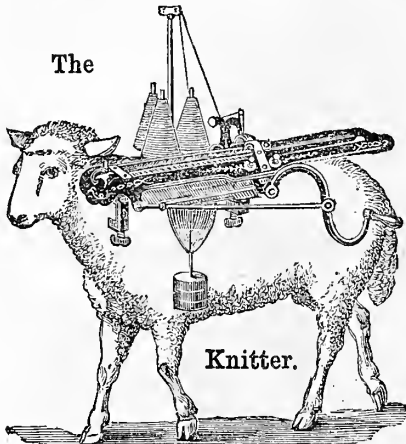
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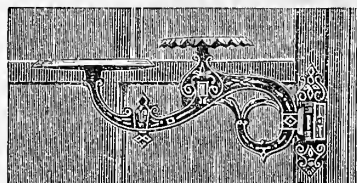
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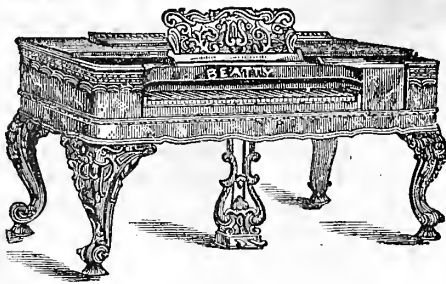
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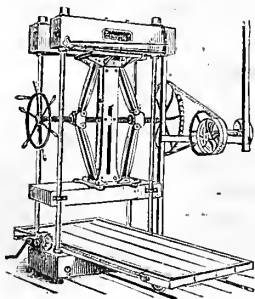
CAUTION.—The public are particularly cautioned against bogus instruments which are being palmed off as genuine Beatty celebrated Pianos and Organs, and particularly from parties in the West and South-west, where this detestable trickery has been extensively practised on the reputation I have gained; also, against the miserable knavery of would-be respectable manufacturers and dealers in this country and elsewhere in procuring my instruments and keeping them knowingly in very bad order, that purchasers may be prejudiced thereby against them and in favor of their own manufacture. As to their assertion that I do not manufacture my instruments, I am abundantly able to meet and prove to the contrary; also, beware of imitation and anonymous circulars, quoted from certain trade journals—write for explanation. I have placed skilled detectives on the track to ascertain the originators of these slanders, and if successful will prosecute them to the fullest extent of the law. **Read what is said of these Celebrated Instruments:** P. H. HANN, Cashier First National Bank, Washington, N. J., says: "The Piano gives the most perfect satisfaction in every respect, after being thoroughly tested." J. L. EVERETT, Cashier Broadway National Bank, New York City, writes: "Organ received. I am fully satisfied with the instrument." Wm. Underdown, Cashier Merchants' National Bank, Philadelphia, writes: "I am glad to say that the Organ continues to give us entire satisfaction." You are at liberty to send any one to see it." In order to more generally introduce my Celebrated Instruments, I am induced to make the above liberal offer. All instruments fully warranted for six years. **Special Offer** now ready on all styles of the world-renowned **BEATTY PIANO**, Grand, Square, and Upright, and **BEATTY'S** celebrated Golden Tongue, Parlor, Church, Hall, and Grand Cabinet **ORGANS**. Over sixty thousand now in actual use in this and other countries, and all giving entire satisfaction. Sweetest tones, most perfect Pianos and Organs ever manufactured in this or any other country. I challenge the world to equal them. **NEW PIANOS**, for which other manufacturers exorbitantly charge \$1,000, only \$297. **Electric \$650 Piano**, only \$175. **Superb \$275 mirror-top Organ**, only \$105. **Parlor Organ**, retail price by local agents \$300, only \$86. **Extra fine \$280 Parlor Organ**, only \$65. No better instruments can be made, and I challenge comparison. You can order direct from this advertisement, as nothing can be saved by correspondence on these prices, as these are made solely to introduce them in a new locality where I have no agents. Illustrated paper, containing testimonials from thousands who are using them, sent free. Address

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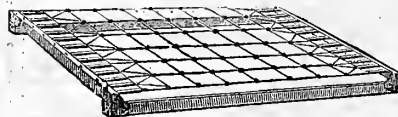
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From the 13th to the 17th of June, 1878, under cooperation of the Section for Agriculture and Horticulture, at Hamburg, and the Union of German Manufacturers and Dealers in Agricultural Machinery, an International Exhibition of all kinds of Agricultural and Garden Implements, will be held in Hamburg, Germany. It is well known that the endeavor of the above named Union has been to liberate manufacturers from the necessity of sending their goods to all Agricultural Exhibitions, whether large or small, enabling them thus to sell their manufactures at lower rates to the farmers. This result is intended to be obtained by limiting the number of exhibitions to the commercial centers of the German Empire, to be periodically repeated. For Northern Germany, Hamburg appears to be the most favorable place, where the various railroads, etc., connect with the seaport, and this leads to the hope that foreign nations will be represented there, so that the farmers and peasantry who will visit the exhibition may have the opportunity of witnessing a complete collection of all kinds of tools for husbandry, and systems in all parts of the world.

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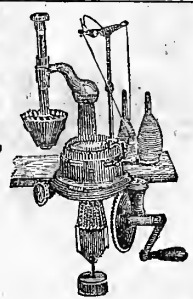
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ART OF CLEANSING FABRICS,

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You may ask all washerwomen and housekeepers, and your answer from the majority will be: "Plenty of elbow grease;" or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No; to do that you must first dip it in the water, and then rub it in again to force water through the fabric. That is what removes dirt after being softened by the chemical action of the soap upon it.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in uniting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

is embodied all the essential points. First, we have the desired beat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a large body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual, being all that is required to complete the operation.

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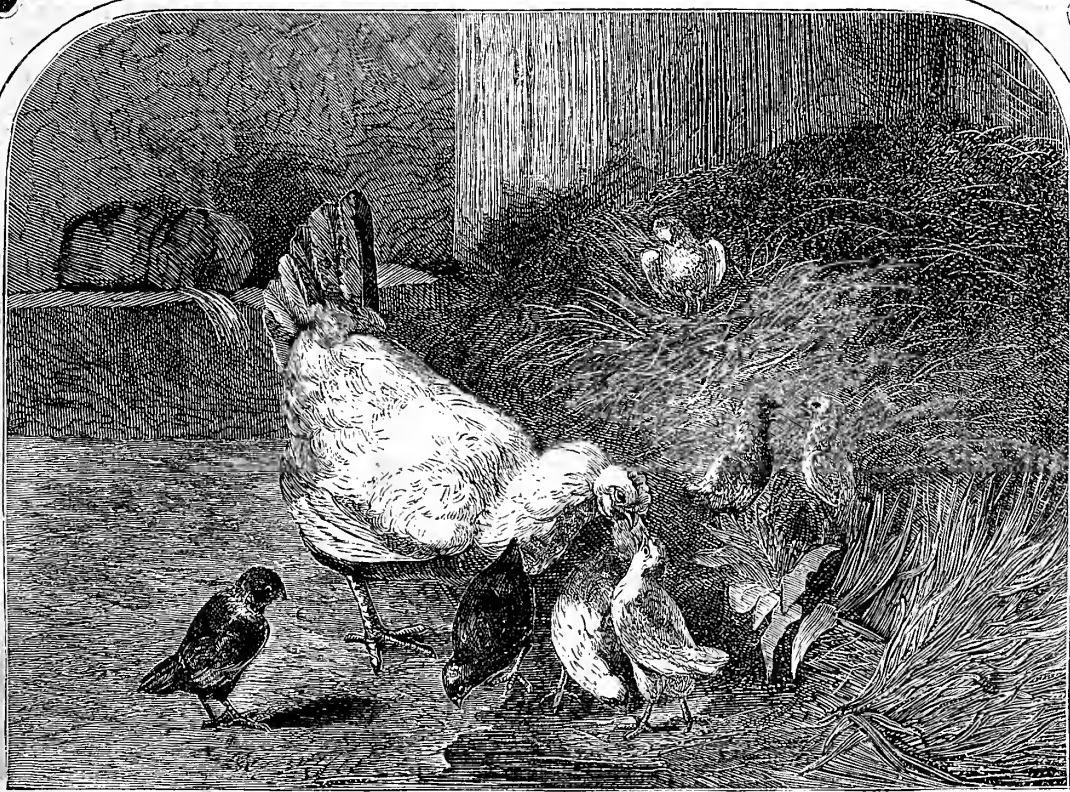
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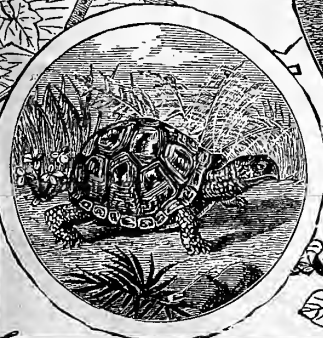
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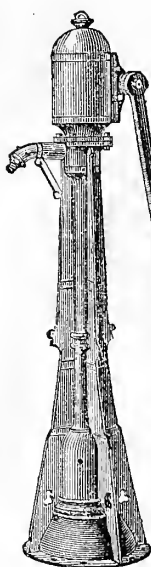


VOL. XXXVII.

NUMBER 4.

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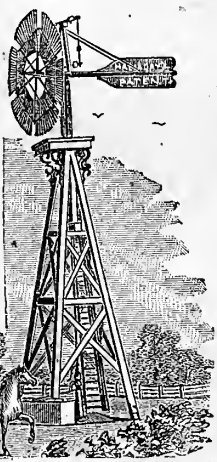
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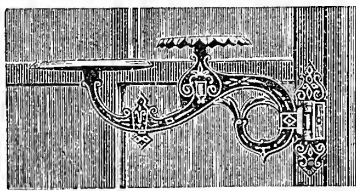
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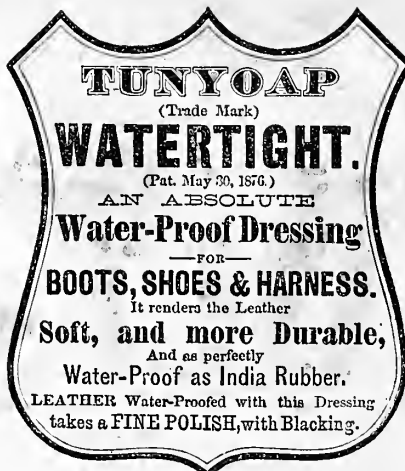
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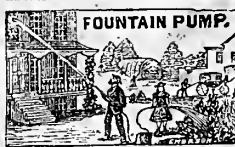
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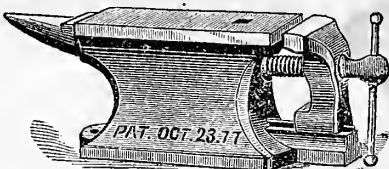
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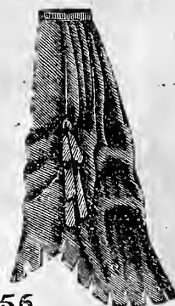
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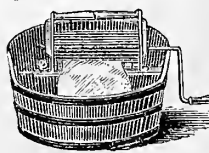
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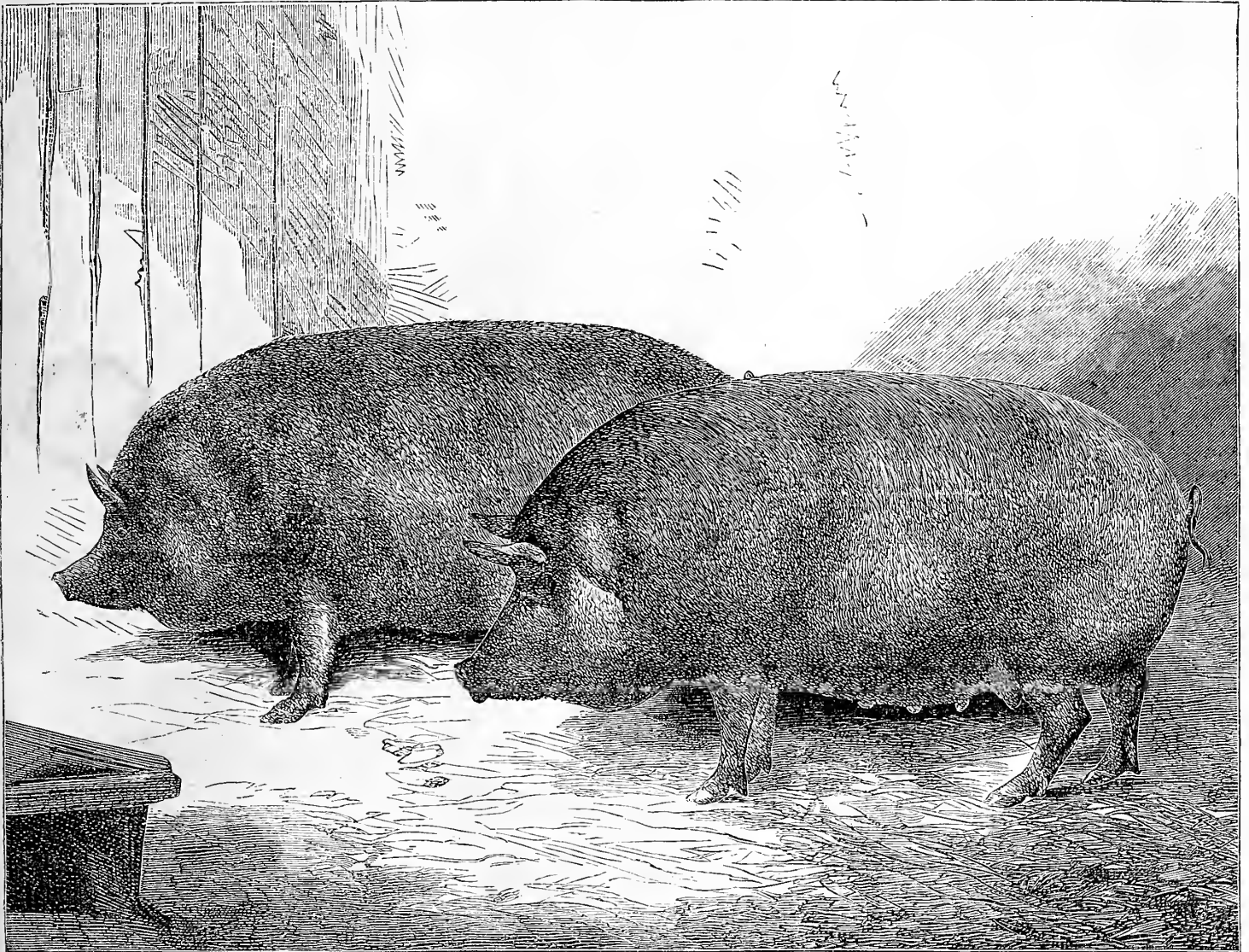
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VOLUME XXXVII.—No. 4.

NEW YORK, APRIL, 1878.

NEW SERIES—No. 375.



BLACK DORSET PIGS. — Drawn and Engraved for the American Agriculturist.

Those who have not traveled in European countries, can hardly realize the strongly marked and peculiar distinctions, which exist between localities that are very near together. "So near, and yet so far" apart are these different localities, that the stranger is surprised, if not bewildered. Thus in the geographically small country, Great Britain, which has but a little larger area than the State of New York, there exist not only many different languages, dialects, customs, and habits, but a very large variety of domestic animals. Several different races of horses, no less than nine distinct breeds of cattle, more than that number of breeds of sheep, and an astonishing variety of black, white, spotted, large, and small swine. A state of things like this could not occur in America, and it is owing to the peculiar character of the British people, slow to change, strongly prejudiced, obstinate even in what they think proper, and averse to travel and removal, that this curious condition of things exists. Here we are apt to change, fond of new things, and in fact anxious to discover something new, and always

ready to overthrow all our plans, and to try experiments in some new direction. Thus, with us, in a few years a breed of animals, which may become popular, spreads here and there over the whole country, and becomes generally distributed. Our people move frequently from east to west, and carry with them some old ideas, but rapidly appropriate those which they find current in their new homes, while in England there are herds and flocks, which have been kept continuously for a century. It is to this peculiar character that we owe the different breeds of pigs that have been imported from England; the Essex, Berkshire, Suffolk, Yorkshire, Lancashire, and others. Doubtless we have become possessed of the best of English swine, although there are breeds or varieties of them which are still generally unknown with us. Among the latter is that which forms the subject of the above engraving, the Black Dorset. This is undoubtedly very nearly the same, in all practical respects, as the well known Essex breed, which has become so popular in this country. The origin of the Black

Dorset is as follows:—About 30 years ago, two black sows were procured from Turkey by an English gentleman named Coates. These were bred to a Chinese boar, and the progeny were, in turn, bred to a Neapolitan boar. Since then, the blood of Mr. Fisher Hobbs' Essex swine has been infused into the breed, and in the end the result is a black pig so much like the Essex, that the difference is only evident in the name. They have all the excellent points of the Essex, with perhaps a tendency to greater size; having been brought to weigh 300 lbs. at 9 months, and 600 lbs. at 18 months. From the Neapolitan they inherit a fine hide, and thin hair, with the consequent tenderness and impatience of cold and rigorous weather. As with all rapid feeders, the flesh is soft, and the fat, oily, when forced to their utmost growth; when moderately well-fed and grazed for a season, or subsisted upon the waste of a dairy, the flesh is of superior quality, and not over fat. The original breeder of these swine is still living, and has been awarded a prize annually in twenty-four out of twenty-five years.

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Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun rises.	Sun sets.	Moon rises.	Sun rises.	Sun sets.	Moon rises.	Sun rises.	Sun sets.	Moon rises.
1	M	5:42	6:26	5:6	5:43	6:25	5:6	5:44	6:23	5:6
2	T	5:41	6:27	sets	5:42	6:26	sets	5:43	6:24	sets
3	W	5:39	6:28	7:29	5:40	6:27	7:27	5:41	6:25	7:24
4	T	5:37	6:29	8:34	5:38	6:28	8:31	5:40	6:26	8:27
5	F	5:35	6:30	9:41	5:36	6:29	9:37	5:38	6:27	9:32
6	S	5:34	6:31	10:49	5:35	6:30	10:43	5:37	6:28	10:37
7	M	5:32	6:32	11:54	5:33	6:31	11:47	5:35	6:29	11:41
8	T	5:30	6:33	morn	5:32	6:32	morn	5:34	6:30	morn
9	W	5:29	6:33	0:53	5:30	6:33	0:46	5:32	6:31	0:39
10	T	5:27	6:36	1:43	5:28	6:34	1:37	5:31	6:32	1:31
11	F	5:25	6:37	2:25	5:27	6:35	2:20	5:29	6:33	2:15
12	S	5:24	6:38	2:59	5:26	6:36	2:55	5:28	6:34	2:51
13	M	5:23	6:39	3:28	5:25	6:37	3:25	5:27	6:35	3:23
14	T	5:20	6:40	3:54	5:22	6:38	3:53	5:25	6:36	3:51
15	W	5:19	6:41	4:18	5:21	6:39	4:19	5:23	6:37	4:19
16	T	5:17	6:42	rises	5:19	6:40	rises	5:22	6:38	rises
17	W	5:16	6:44	7:38	5:18	6:41	7:34	5:20	6:39	7:31
18	T	5:14	6:45	9:0	5:16	6:42	8:53	5:19	6:40	8:50
19	F	5:12	6:46	10:18	5:15	6:43	10:12	5:18	6:41	10:16
20	S	5:11	6:47	11:27	5:13	6:44	11:21	5:16	6:42	11:14
21	M	5:10	6:48	morn	5:12	6:45	morn	5:15	6:43	morn
22	T	5:8	6:49	0:24	5:11	6:46	0:18	5:13	6:44	0:11
23	W	5:8	6:50	1:10	5:10	6:47	1:8	5:12	6:45	1:8
24	T	5:6	6:51	1:44	5:8	6:48	1:38	5:11	6:46	1:33
25	F	5:5	6:52	2:11	5:7	6:49	2:7	5:10	6:47	2:28
26	S	5:2	6:54	2:53	5:5	6:51	2:51	5:8	6:48	2:50
27	M	5:0	6:55	3:28	5:4	6:52	3:21	5:6	6:48	3:11
28	T	4:59	6:56	3:11	5:2	6:53	3:11	5:5	6:49	3:5
29	W	4:58	6:57	3:29	5:1	6:54	3:31	5:4	6:50	3:31
30	T	4:56	6:58	3:51	5:0	6:55	3:53	5:3	6:51	3:54

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON.	CHICAGO.
New M'n	2 4 30 cv.	4 15 cv.	4 6 cv.	3 54 cv.	3 24 cv.
1st Quart	10 10 11 mo.	9 59 mo.	9 47 mo.	9 35 mo.	9 5 mo.
Full M'n	17 1 13 mo.	1 1 mo.	0 49 mo.	0 37 mo.	0 7 mo.
3d Quart	24 3 49 mo.	3 37 mo.	3 25 mo.	3 13 mo.	2 43 mo.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1878.

The active work of the year is now about to begin, over a large extent of country, and it may be well to consider a few plain and practical statements, and their bearing. Labor is the only source of wealth. Labor creates nothing; it only adds to already existing matter that quality of usefulness by which it is made to increase the general wealth. Wealth is simply the accumulation of the products of nature, and of our own industry—stored up for future use. Labor is set in operation by energy, and is guided by intelligence. An energetic man is industrious, and is tenacious of purpose. It is intelligence which enables us to make the most of our resources and to apply our labor most effectively. Unless energy is controlled by intelligence, physical or bodily labor is wasted uselessly. Mental labor plans, invents, arranges, and directs bodily labor, and makes it productive in proportion to the accuracy of the reasoning which incites it. The bodily labor of one man, or that of thousands of men, may be set in operation or guided by the mental labor of one man. Mental labor is therefore more effective and more valuable than bodily labor, and its value is to be measured by the value it adds to bodily labor. The mental labor which invents a plow, a mowing machine, or produces a book, may be of immense benefit to a whole country, or even to the whole world, for it may serve to increase many times the results of the labor of millions of men. So the mental labor or intelligence of the man who uses a plow, or a harvester in the best manner, or who reads the book to the most profit, becomes worth to him many times more than his muscular force, because these may enable him to do many days' labor in one, without any physical weariness, and so add to his actual wealth and his comfort. Thus it is seen that the mind and the hand must unite together, to make the labor of each effective; and that the mind may enable the hand to very greatly increase its usefulness. Work on the farm deals with things that are hidden to the sight, and need to be clearly understood; and there is no other physical labor performed in the world that needs more to be guided by the labor of the mind, than the cultivation of the soil, the rearing of stock, and the conversion of field products into finished articles for sale, such, for instance, as meat, butter, cheese, milk, etc. The result of all

this is, that a farmer should be a studious, thoughtful man, as well as an energetic industrious worker. He must also learn to stick to one thing; to persist in his chosen course; to be patient and persevering, and to strive to make his labor skillful and effective. With these qualities, there is no man surer of a reward for his labor, nor of better pay for the best quality of work.

Hints for Work.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.]

The Plow is already at work in thousands of fields, while a few are yet kept idle by a sodden soil. Caution should be used lest the plow be put to use too soon. No furrow should be turned while the soil is wet. When the mould-board is smeared, and does not brighten in the soil, or when the furrow is pasty and does not crack open and fall apart loosely, as it is turned over, the soil is too wet, and will be injured by plowing. Make haste slowly in plowing.

Make a Note of It.—A little note-book for the vest pocket may be made by folding a sheet of paper until it is about 2 inches long and 1 inch wide. Stitch this into a pasteboard cover, cut the edges, and keep the book in the vest pocket with a piece of lead pencil. Note down in this every thing that needs attention as it occurs, and in the evening, either dispose of it, or make a more permanent memorandum. Having practised this method for years, we can commend it as very useful.

Spring Wheat.—In spring wheat sections this is the first crop to be put into the ground. Where it will grow, it will succeed all the better for the best culture. Unless more than 10 bushels of grain per acre can be harvested, it is labor lost to grow this crop. It would be better to raise

Oats.—Last fall we sowed half an acre of Tennessee winter oats. At the present time they are alive, and although the leaves are yellow, the hearts are green. The greatest danger is now over, and as they have been exposed to a severe drouth, constant freezing and thawing, and a temperature of 6 degrees below zero, they may be considered as a safe crop in ordinary seasons. If they can be acclimated to stand our most severe winters, they will be very valuable, and will be widely sown hereafter. Spring oats should be sown rather thicker than has been usual. Three bushels per acre is better than 2½ if the ground is made rich enough, and

The Ground Should be Made Rich Enough to grow the largest possible crops; else we are laboring with our hands and not with our heads, and unprofitably. Now that we have the most useful artificial fertilizers, specially prepared for all crops, by honest and responsible dealers, there is no excuse for poor crops, unless the farmer is too poor to procure these fertilizers. In that case he should cultivate less land, and learn to grow the largest crops, by better work and more liberal fertilizing.

High Farming is simply making the most of our resources. It is simply putting our work where it will do the most good, and suffering no wastes to exist. It requires skill more than money, and good management rather than costly tools, fine stock, and showy buildings. It is not altogether in burying miles of tiles in the ground, but in bringing our fields under such a degree of cultivation, according to our means, as will produce crops with the greatest profit. The farmer who gains the most from the least outlay, is a "high farmer."

Roots.—No other crop is more profitable than a good root crop. Mangels and sugar-beets are the most valuable of these crops. For these the ground should be prepared this month. Full directions for their cultivation are given in an article elsewhere. An Improved Yellow Globe Mangel, and Lane's Imperial Sugar-beet, are the best kinds in cultivation. One of the most recent, and best approved Globe Mangels, is figured on page 137. A mixture of guano, superphosphate of lime, and potash salts, will make an excellent fertilizer for these crops. The seed should be procured now,

ready for sowing late this month, if the season is well forward, or early next month.

Potatoes.—While the potato beetle is about, most farmers will plant early potatoes. They are out of the way before the great army arrives. But we look for a great diminution of this pest if potato growers will fight them at all times for a year or two. The open winter may have destroyed a great many, but enough will remain. Yet we would plant potatoes. There is no more profitable crop when planted on good soil, and well cultivated. The Early Rose is still the best for the general crop; Early Vermont is very good, and yields well; Snowflake is an excellent variety; Early Ohio yields well, and Burbank promises to beat its parent, Early Rose. This is variety enough for early sorts. Read the account of True's planter given last month.

Cultivation of Wheat.—The Travis horse-hoe, invented by a Michigan farmer, has been found very serviceable in cultivating wheat sown in drills. In time, we shall cultivate wheat as we do corn, with surprising benefit, and Mr. Travis is the pioneer in this modern, but much needed improvement.

Top-dressing Sod for Corn.—We doubt if any better disposal of manure could be made at this season than to top-dress at once the sod to be plowed by and by for corn. It is easy to grow 100 bushels of corn to the acre if we set about it. Many farmers are doing it. It only needs 2 good ears to each hill 3 feet apart each way; that is all. Having a corn that yields four or five ears to a stalk, it is as easy to grow 100 bushels per acre of corn as 25 bushels of wheat, with the manure and cultivation.

There is no Danger in Growing Too Much.—Great Britain imports eight hundred million of dollars worth of food every year for her 30 millions of people. Her farmers only raise 40 per cent of the food consumed in the country; the rest is purchased from abroad. We can have the bulk of this trade if we want it. And besides this, our working population is increasing very fast. There is no danger of over production, if products are properly assorted. Farmers, miners, and artisans, in due proportion together, will not flood a country with unsalable products. Plentiful food is the basis of prosperity.

Meadows and Pastures need a little stimulating fertilizer. A dressing of 200 pounds per acre of bone-flour, superphosphate, or guano, often doubles the yield. Nitrate of soda (150 pounds per acre) gives a rank growth, but the hay is not so nutritious as that from the phosphatic manures. Improved meadows mean more milk, cheese, butter, and beef. Along with the fertilizer, a scattering of fresh seed, timothy, blue-grass, red-top, and clover, mixed; and a good harrowing will be beneficial. All this may be done this month.

Horses.—A regular allowance of grain will now be needed by working teams. It is economical to feed ground grain. Ten quarts a day is a full allowance for a hard-worked horse. A pailful of moistened cut hay, with 3½ quarts of ground feed mixed with it, is the usual quantity fed to each of our horses. This feed is not too bulky, and when given nearly dry, has not the injurious effect on the wind of wet soft feed. The best feed is equal parts of corn, rye, or oats, and wheat-bran.

Cows.—In-coming cows should be treated with caution. Good hay is sufficient food for the month previous to calving. Watch the udder closely, and on the first appearance of heat and hardness, bathe it with cold water to reduce the inflammation, and insert a silver milking tube into each teat to draw off the milk as it may be secreted. In case garget has occurred previously, give 20 grains of iodide of potassium in a drink of water, and rub the udder with a mixture of 7 drams of glycerine and 1 dram of iodide of potassium. It is well to let the calf suck the cow if there is any trouble with the udder.

Calves.—By raising the heifers of our best cows, the stock will be improved. Every farmer should aim to keep only the best. A cow yielding only 8 quarts of milk a day does not pay for the feed, and should be replaced with a better one. We must look upon our live-stock as machines, kept for a purpose, and discard unprofitable animals.

Sheep.—As the days become warmer, ticks will

increase, and sheep will appear restless under their winter blankets. Give them shade on the cool side of a building, or put up a temporary shed in the field where they may escape the hot sun of noon-day. As the sheep begin to nibble the new grass, look out for scours in the lambs. If this appears, give a tablespoonful of a mixture of peppermint water with prepared chalk, and a little ginger. For the ticks, see hints last month.

Pigs need clean dry pens, and supply breeding sows with cut straw, chaff, or sawdust, for litter.

Oxen, when at work under a hot spring sun, will suffer from the heat. Give them frequent resting spells, and water, with some bran stirred into it.

Manure should be turned over early in the month, so as to have it rotted as much as possible for use in hill or drill crops. Those who have heeded our advice, to cut all the straw and stalks, either for fodder or litter, will find the handling of the manure heap an easy task. Those who have not, will probably regret the failure, and resolve to do better.

Poultry.—Many hens will now have laid out their litter, and become broody. Give sitting-hens clean nests of soft hay, and do not set a hen that is infested with vermin. Put such a one in a close coop lined with tarred roofing-felt, and apply grease to her legs and under the wings. Houses may be kept free from vermin by cleanliness, and using grease and kerosene oil on the perches.

Sundry Matters.—Haul out a liberal allowance of the best manure to the garden, with a load of good cow-manure for the flower beds. The satisfaction will come when the effects are seen. Raise the earth around the well, or cistern, to turn off surface water. Observe the strictest cleanliness in the stables and yards. Make channels for waste water. Raise the centers of roads and foot paths, to keep them dry, before the hurry comes on. If seeds of all kinds have not been procured, do this without delay. Be cautious in trying new kinds, and never risk the main crop in uncertainties.

Notes on Orchard and Garden Work.

There is rarely a season that is not regarded, for one reason or another, as "remarkable," yet a consultation of the records for a few years back, will show that the same "remarkable" seasons are not of so rare occurrence. Still we can not recollect when we have before had, near New York, blue-birds abundant at the end of February, followed in early March by other birds, in such numbers as to indicate that, in their opinion at least, we have an early spring. If the present indications (March 12th) continue, there will be a rushing time with all spring work. Those who act upon the principle of doing work whenever it can be done, are less likely to be crowded, than those who put off spring work, because it is not spring by the Almanac. The Notes for the past two months should be consulted, and all preparatory work hurried up.

Orchard and Nursery.

The Planting Season, if this weather continues, will be short, and the work must be pressed. There is little to add to last month's Notes.

Trees from the Nursery, if transported a long distance, may be injured in warm weather, in two ways. 1st. They may be dried out. This will be shown by the shrivelling of the bark on the twigs. For trees in this condition, open a trench in light, mellow soil, large enough to contain them, root and branch. Then, first seeing that the labels are all right, bury them entirely in moist, but not wet, soil, putting a stake at the roots as a guide in taking them out. Let them remain buried five days or a week, and, when taken out, they will be found perfectly restored. Another danger is, 2d, from

Overheating in Box or Bundle, causing the buds to push. We have received trees, long on the journey, the shoots of which had pushed two or three inches. It will be found that it is always the upper buds on the branches which start first, and the only remedy is to cut every branch back to a dormant bud—one that has not started—no matter if it leaves

the tree a mere stick with stubs upon it. This is severe treatment, but is the safest.

What Varieties to Plant, is a question often asked of us, and is one of the most difficult to answer. If the fruit is for home use, a succession from the earliest to the latest, will be needed. If fruit is to be grown for market, then it is necessary to know what the market requires. In all these cases, the fruit-growers in the neighborhood can give better advice than any one else, and we have never yet met a successful fruit-grower who was not willing to tell what he knew for the benefit of others. It is only quacks who have secrets. A recent request came from Central Massachusetts for us to name

Six Pear Trees that he could plant for profit. We named several, the fruit of which he might profitably dispose of in Boston at a good price, which could only be sold in New York as "cooking fruit." This merely shows that one should consult the tastes of his market in selecting varieties.

The Home Nursery.—Those who propose, in a year or two, to set out orchards, can well prepare for it now. They can buy from the nurseries root-grafts, or nursery stocks "in bud," i. e., stocks budded last year, on which the buds have "taken," and which will start into growth this year, from which the stock above the bud, must, of course, be cut back. These, the very beginnings of trees, can be bought very cheaply, and if set 18 to 24 inches apart in rows wide enough apart to be well cultivated, will, at the end of two years, give excellent young trees to set in the orchard, at a small cost.

Grafting Old Trees, to convert valueless kinds into better ones, should be done just when the buds swell. We can not repeat the directions for this every year. Grafting was described in full, with engravings, and made so simple that any intelligent boy can do it, in the *American Agriculturist* for April, 1877, which may be had, by mail, for 15 cents.

Books on Fruit Culture.—Every one who has an orchard, should have at least one book on fruit culture. A list of the leading works was given in these Notes in January last.

Insects.—Where the "Canker-worm" is troublesome, look to the barriers to prevent its ascent, and renew the tar or printer's ink upon the bands. Dead insects will often make a bridge over which the living may cross; a daily inspection is needed.

Fruit Garden.

LAST MONTH'S NOTES, in a great measure, indicate the principal work for this month, and as that will be planting, it can not be pushed forward too early. Early planting is desirable for every kind of fruit. In northern localities the

Winter Covering of strawberries and the tender kinds of raspberries will remain until the present month. Lift the raspberries, and tie them to the stakes or trellis, when all danger of severe frost is over, and open the straw, or hay, on the strawberry beds, over each plant, to expose it freely.

Gooseberries and Currants should have been procured last fall, or early this spring, but it may be done now if the plants have not started into growth.

Grapes.—The Notes of last month, together with the article on page 144, should induce those who have no vines to plant them, and will serve as a guide as to what, where, and how to plant.

Kitchen and Market Garden.

In all, except the most northern localities, the cold-frame plants will be set out, and the sashes which have covered them during the winter, will be doing service on other frames, in forwarding lettuce, radishes, etc.

Hot-Beds and Cold-Frames, in which seeds have been sown, will need increased care, as the sun gets warmer. Last month we indicated what this care is—abundant ventilation during the day, early closing of the frames, and covering in cool nights.

Early Sowing does not mean the same thing in Canada that it does in Georgia, yet there are in both localities certain things that may be sown first.

The Earliest Sowings, everywhere, are of Beet,

Parsnip, Early Turnip, Spinach, Radish, Peas, Leek, Onion, Parsley, and Cress. These should be sown first so soon as the soil can be worked, and all are to be sown where they are to grow, though Parsley and Leeks may be transplanted if desired.

Seed-Beds of Cabbages and other things to be transplanted, if not under glass, or in window-boxes in the house, as heretofore advised, may be made in a sheltered sunny place in the open ground.

Early Potatoes, to be early, must be planted at once, and if the soil is light and warm, no matter if a frost nips the tops, they will start from below.

Succession Crops.—Where the season has allowed of early sowing of Beets, Peas, Radishes, Spinach, and other early vegetables, succession crops should be put in every two weeks or so, until hot weather is likely to prevent their healthful growth—and this should be kept in mind all through the season.

Asparagus.—If new beds are to be made, get one-year-old plants, and give them all the room that can be afforded. The old directions for a family garden were, to put the plants 12 by 18 inches. This will do if no more space can be afforded, but market-growers find that the wider the space, the better the crop. Some who grow for markets, set the plants as wide apart as 6 ft. by 4 ft., and find this the most profitable for field culture. This would, of course, be impracticable in a family garden, where 2 x 2 feet will be wide enough. The old practice of manuring a bed to last for years is not now followed. The plants at setting should have a good supply of manure, and then an annual dressing afterwards. Asparagus should not be cut until the third year after setting.

Sweet Potatoes should be started about six weeks before they can be safely set out, which is, in the latitude of New York, about June 1st. This is a sub-tropical plant, and nothing is gained by putting it in the open ground until that is well warmed. In southern localities, the potatoes are "bedded out"—a pit is dug in a sheltered place, manure put in, and some soil placed over it. The potatoes are laid in, and, if large, cut lengthwise, and covered with about two inches of rich soil; the bed must be covered at night, and on cool days, with boards. In the Northern States, the potatoes are started in a hot-bed.

Odds and Ends.—Procure all the seeds you are likely to need, early....Read over Notes for the last two months....If you have no seed-drill, get one of some kind—it will pay for itself in one season, even with a small garden....Read Prof. Atwater's articles on fertilizers, in former months, as they apply to the garden as well as to the field. Try new varieties, all that you can afford, but do not give up standard sorts for novelties, however highly praised. Try new things, but go slow.

Flower Garden and Lawn.

The title really should be "The Lawn and Flower Garden," as in many cases the lawn is the first consideration; the lawn is the ground-work upon which the flower-beds, be they simple or elaborate, are to be displayed.

In making a lawn, it must be borne in mind that the work is to last for years, and that the soil must be as well prepared for the grass as if for the choicest plants. Draining, if needed, is the first necessity; to this must follow, abundant manuring, deep plowing, harrowing, and rolling. If the rolling discovers any weak spots, these must be filled in. The next question will be

Sods or Seeds?—If the lawn is not too large, and good pasture, or road-side turf, is to be readily obtained, it is better to use it; but,

In **Turfing**, it must be borne in mind, that to make a successful lawn, the soil is to be as well prepared as for sowing seeds. The turf should be of the best kind, and free from all weeds; and when laid, should be well pounded down. If any soft spots are found, they should be made solid.

In **Seeding a Lawn**, it is very desirable to lay all the margins along roads and paths, as well as the margins of flower-beds, with turf. Sow early, and, to insure an even east, divide the seed into three

or four parts, and sow in as many different directions. For kinds, see last month. Use the roller freely, and notice, mend, and re-sow all soft spots.

Sowing Grain with Grass, which is often advised, is not needed unless the lawn is sown very late.

Planting of shrubs and trees can not be done now, too soon. The planting of ornamental beds, usually done with tropical and sub-tropical plants, should be deferred until the ground is well warmed.

Ornamental Beds.—Experience has shown that European examples have little value for us, and that for ornamental work we must depend upon foliage, rather than upon flowers; and we may employ, for effect, plants with colored foliage, and those with broad leaves, like the Cannas and other similar plants, generally classed as sub-tropical.

Coleuses and Alternantheras.—Plants of this kind of course require a greenhouse to provide a stock. Those who have not such facilities, can produce ornamental effects later in the season with

Annuals.—Thus, some of the ornamental varieties of *Ricinus*, or Castor Oil Plant, are very effective; another very showy annual, judiciously used, is *Euphorbia marginata*. Then there are the different

Celosias.—Indeed, a consultation of the seed catalogues of the leading houses, will suggest various other annuals that may be used with good effect.

Hardy Perennial Plants should not be overlooked, as excellent bedding effects may be produced with these. We last year described a bed filled with the *White Anemone Japonica*, bordered with *Sedum spectabile*. Other combinations may be made.

Spring Bulbs, such as *Gladiolus*, *Tiger Flower*, and others, are to be put in as soon as the weather becomes settled. It is well to make two or three plantings for a succession.

Greenhouse and Window Plants.

Shade will soon be needed for plants under glass; this is best done by white-wash—ordinary lime wash, such as is used upon plastered walls. To make a gradual shade, this is flitted from the brush in drops, sprinkling the glass thinly at first, and increasing the spattering as the sun gets hotter.

Shade for Window Plants must be provided in a different manner; usually a screen of common cotton cloth, such as would be needed, were there no plants at the window, will be sufficient.

Harden-off will be necessary with all plants, whether in the window or greenhouse. This is accomplished, in either case, by free admission of air, whenever the outside temperature will allow.

Stripping the Greenhouse, and placing all the plants outside, is not now so much practised as formerly, as it is very easy to keep the house in an attractive condition not only by the use of the summer-blooming greenhouse plants, such as *Gesnerias*, and those of that family, but by the use of such showy annuals as the *Balsams*. Whoever has not seen the *Balsams* carefully grown in pots, can have no idea of the beauty that this flower is capable of. The same may be said of some other annuals.

Plants to go into the Border, such as *Geraniums*, will get too large by fall to be taken in again, and it is well to propagate others from cuttings early in the season to decorate the house next winter.

Bulbs.—The last of the *Hyacinths*, and other bulbs, will now be in flower. As soon as the flowers fade, turn out the bulbs, if the ground is open, in some spare corner, and they will in time resuscitate.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending March 12th, 1873, and for the corresponding period last year:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	23 d's this m'th	1873.	1872.
	3,348,000	3,804,000	1,516,000	91,500	569,000	403,000	27 d's last m'th	3,611,000	1,731,000
	67,000	504,000	537,000						
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	23 d's this m'th	1873.	1872.
	3,348,000	3,912,000	3,238,000	243,000	551,000	526,000	27 d's last m'th	3,976,000	2,874,000
	263,000	476,000	581,000						

Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	23 days 1873.	1872.	1871.
	3,348,000	3,804,000	1,516,000	91,500	569,000	403,000	23 days 1871.	239,000	263,000
	69,000	1,401,000	69,000	194,000	613,000				
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	23 days 1873.	1872.	1871.
	3,348,000	3,912,000	2,233,000	243,000	551,000	526,000	23 days 1871.	227,000	634,000
	98,000	1,931,000	98,000	246,000	771,000				

Exports from New York, Jan. 1, to Mar. 10.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	1873.	1872.	1871.
bbls.	bush.	bush.	bush.	bush.	bush.	bush.	475,400	7,483,409	2,776,780
							254,353	1,576,899	2,078,553
							357,775	1,910,068	2,639,925
									15,387

Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	1873.	1872.	1871.	1870.
bush.	bush.	bush.	bush.	bush.	bush.	Mar. 11, 1873.	1,059,871	420,481	114,260
						Feb. 11, 1873.	1,074,033	774,470	208,846
						Jan. 10, 1873.	2,336,715	1,059,909	238,333
						Dec. 10, 1872.	2,344,982	1,723,429	399,077
						Nov. 5, 1872.	984,374	2,643,502	166,919
						May 7, 1872.	761,686	468,809	198,016
						Feb. 7, 1872.	3,083,819	2,302,261	374,142
						Jan. 8, 1872.	3,068,010	3,077,504	341,750
						Dec. 11, 1871.	3,110,233	3,383,554	218,841
						Apr. 10, 1871.	3,393,844	282,140	68,429
						Jan. 10, 1870.	3,302,393	693,982	100,741

CURRENT WHOLESALE PRICES.

	Feb. 12.	Mar. 12.
PRICE OF GOLD.	101 7/8.	100 3/4.
Flour—Super to Extra State	\$4 00 @ 5 75	\$4 10 @ 5 50
Super to Extra Southern	4 00 @ 8 00	4 10 @ 7 75
Extra Western	4 85 @ 9 00	4 75 @ 8 50
Extra Genesee	5 25 @ 6 50	4 75 @ 6 25
Superfine Western	3 85 @ 4 75	4 10 @ 4 65
RYE FLOUR	3 00 @ 4 00	3 90 @ 3 90
CORN-MEAL	2 50 @ 3 10	2 50 @ 3 10
BUCKWHEAT FLOUR, #100 lbs	1 25 @ 2 00	1 25 @ 1 85
BUCKWHEAT, #100 lbs	1 25 @ 2 00	1 25 @ 1 85
WHEAT—All kinds of White	1 35 @ 1 44	1 35 @ 1 41
All kinds of Red and Amber	1 00 @ 1 40	1 00 @ 1 36 1/2
CORN—Yellow	50 @ 60	52 @ 58
Mixed	44 @ 59 1/2	47 @ 60
White	51 @ 60	52 @ 61
OATS—Western	33 @ 41 1/2	33 @ 40
State	35 @ 41 1/2	35 @ 41
Seed	75 @ 70	76 @ 76
BARLEY	60 @ 1 00	70 @ 76
BARLEY-MALT	65 @ 1 20	60 @ 1 20
HAY—Bale, #100 lbs	40 @ 85	40 @ 85
STRAW, #100 lbs	40 @ 65	35 @ 65
COTTON—Middle, #100 lbs	11 @ 11 1/2	11 @ 11 1/2
HOPS—Crop of 1872, #100 lbs	5 @ 13	5 @ 13
old, #100 lbs	1 @ 5	1 @ 5
FEATHERS—No. 1, #100 lbs	45 @ 50	38 @ 47 1/2
SEED—Clover, West. & St. #100 lbs	7 1/2 @ 8 1/2	8 @ 8 1/2
Timothy, #100 lbs	1 35 @ 1 40	1 25 @ 1 40
Flax, #100 lbs	1 55 @ 1 45	1 45 @ 1 50
SUGAR—Refined & Grocery #100 lbs	6 1/2 @ 8 1/2	6 1/2 @ 8 1/2
MOLASSES, Cuba, #100 lbs	30 @ 36	20 @ 35
New Orleans, #100 lbs	25 @ 49	22 @ 48
COFFEE—Rio (Gold), #100 lbs	15 @ 18 1/2	14 @ 17 1/2
TOBACCO, Kentucky, #100 lbs	4 @ 15	4 @ 15
Seed, #100 lbs	50 @ 50	50 @ 50
Wool—Domestic, #100 lbs	28 @ 52	25 @ 52
Domestic, putted, #100 lbs	20 @ 40	28 @ 40
California, spring clip, #100 lbs	18 @ 32	18 @ 28
California, fall clip, #100 lbs	10 @ 23	12 @ 20
TALLOW, #100 lbs	7 1/2 @ 7 1/2	7 1/2 @ 7 1/2
OIL—Coke, #100 lbs	30 @ 31	30 @ 31
Oil—Mess, #100 lbs	11 25 @ 11 75	10 @ 10 25
Extra Prime, #100 lbs	9 00 @ 9 00	9 00 @ 9 00
BEEF—Extra mess, #100 lbs	12 50 @ 13 00	12 00 @ 12 50
LARD, in tins, #100 lbs	7 1/2 @ 8 10	7 25 @ 7 65
BUTTER—State, #100 lbs	12 @ 37	10 @ 36
Western, poor to fancy, #100 lbs	10 @ 40	10 @ 38
CHEESE	5 @ 13 1/2	5 @ 14
Eggs—Fresh, #100 lbs	12 @ 18	10 @ 15 1/2
POULTRY—Fowls & Chickens	8 @ 15	7 @ 14
Turkeys, #100 lbs	6 @ 15	5 @ 14
Geese, #100 lbs	1 00 @ 1 75	1 00 @ 2 00
Ducks, #100 lbs	55 @ 90	60 @ 1 00
Roosters, #100 lbs	5 @ 6	5 @ 6
Ducks, Wild, #100 lbs	25 @ 2 00	30 @ 2 25
GROUSE, #100 lbs	75 @ 1 25	75 @ 1 50
PIGEONS, wild, West'n, #100 lbs	1 00 @ 2 00	1 00 @ 2 00
QUAIL, #100 lbs	1 00 @ 2 00	1 50 @ 2 75
RABBITS, #100 lbs	30 @ 35	20 @ 25
HARES, #100 lbs	75 @ 1 00	75 @ 1 00
TRUNKS, #100 lbs	75 @ 1 00	50 @ 1 00
CABBAGES—new, #100 lbs	3 00 @ 4 00	2 00 @ 4 50
Red	2 50 @ 4 00	2 00 @ 4 50
ONIONS—new, #100 lbs	1 25 @ 1 75	1 12 1/2 @ 1 87 1/2
CARROTS, #100 lbs	75 @ 1 00	75 @ 1 00
POTATOES, Bermuda, #100 lbs	6 00 @ 7 00	4 50 @ 5 00
POTATOES, #100 lbs	1 25 @ 2 00	1 25 @ 1 50
SWEET POTATOES, #100 lbs	1 25 @ 2 00	1 25 @ 1 50
BEETS, #100 lbs	50 @ 75	60 @ 75
Bermuda, #100 lbs	— @ —	75 @ 1 00
PEAS—Canada, in bond, #100 lbs	— @ 83	82 @ 83
green, #100 lbs	1 30 @ —	1 15 @ 1 25
BEANS—#100 lbs	1 50 @ 2 60	1 45 @ 2 50
BROOM-CORN, #100 lbs	4 @ 7 1/2	4 @ 7 1/2
SPINACH, #100 lbs	— @ —	1 50 @ 2 50
KALE, #100 lbs	— @ —	1 00 @ 1 25
TOMATOES, #100 lbs	1 30 @ —	75 @ 1 00
APPLES—#100 lbs	2 75 @ 5 00	3 00 @ 5 50
PEANUTS, domestic, #100 lbs	— @ —	1 00 @ 1 45
GRAPE, #100 lbs	2 @ 7	— @ —
CRANBERRIES—#100 lbs	5 00 @ 7 00	7 00 @ 9 00
Orange, #100 lbs	1 00 @ 1 25	1 25 @ 2 50
ORANGES, Florida, #100 lbs	2 75 @ 5 00	3 50 @ 5 50

Gold has been up to 102 1/2, and down to 100 1/4, closing March 12, at 100 1/4, (or nearly down to par), as against 101 1/2 on Feb. 12; 102 1/2 on January 12; 103 on December 12; 102 1/2 on Nov. 12; 103 on October 12; 105 1/2 on July 12; 104 1/2 on June 12; 107 1/2 on May 12; 104 1/2 on March 12, of last year....Though the receipts and sales of Breadstuffs, during the month, have been to a comparatively liberal aggregate, the course of the market has been far from satisfactory to sellers, who have been compelled to make further important concessions to buyers, especially toward the close, with a view to placing supplies promptly. Advances from Europe continue against the export interest, and serve to depress values. Flour and Barley close heavily and irregularly, on a tame movement. Wheat and Corn leave off irregularly. Of the purchases, on export account, were large quantities of Wheat for French, German, and other Continental markets; and of Rye, chiefly for Germany. Operations in Barley were much less extensive, as well for shipment, as for home use. Some revival of export demand has been noted for Oats....In the line of Provisions, the feature has been

at \$75,278,281. Of oysters, 4,000,000,000, valued at \$50,900,000. (This equals 100 oysters for every man, woman, and child, in the country.)

Sending Papers.—We again ask our friends who send us papers containing articles they wish us to see, to mark the articles by pencil or ink line (blue pencil is best), so distinct that it will readily catch the eye. The clerk who opens the paper mail can not possibly read, even the headings, of the articles in the hundreds of papers that come daily. Also notify us by letter or postal, by the same mail, of the sending of the paper. We now and then get a card—like the one at hand—saying: "I sent you last week a copy of," etc. The paper, not being marked, is no doubt on its way to the paper-mill, to be ground over. The Post-office rulings allow an article to be marked by a line, to call attention, but, of course, there must be no writing.

Much Delay and Disappointment result from mixing editorial and business matters in the same letter. A letter on business, of course, goes first to the business department to which it belongs, whether it relates to matters concerning the paper or to the book business. When those having charge of such matters have done with the letter, it is passed over to the editors. It may, and often does, happen, that a question for the editors, in this way, often loses a whole month, through the delay of a day or two thus caused. This may be avoided by putting the editorial and the business matters on separate sheets in the same envelope.

Supplying Experimental Fertilizers.—In proposing the Farm Experiments, described last month, and elsewhere in the present number, it became necessary to make arrangements at once with some one to supply the fertilizers to be used in the experiments. We consulted with several responsible dealers that were most accessible, and as the Mapes Formula Company were the first we met who cheerfully and heartily entered into the project, arrangements were made to have the fertilizers put up by them. The reason why we did not merely name the fertilizers, and suggest that they might be had of any reliable dealer, was because, in a first effort, it seemed desirable, important even, to have the work concentrated at one point, to secure the needed analysis and oversight, and the necessary uniformity in the materials furnished. It is due to Messrs. Wm. H. Bowler & Co., well-known dealers in fertilizers, at Boston and New York, to say that, on seeing our announcement, they at once offered to supply the trial samples on the terms named, and with all desirable guarantees. We would have been glad to have them do so, as we have every confidence in their ability and character; and we might say the same in regard to several others first-class dealers. But it is hardly practicable, at this time, to make any other arrangements than those announced last month. We hope some similar project may be carried out another season, embracing the entire country, and a number of those dealers who guarantee the quality of their articles.

Sale of Fine Jerseys and Family Cows.—Mr. Thomas Fitch, of New London, Conn., announces a sale of thoroughbred Jersey cattle and high-grade animals, bred especially for family cows. No breeder has been more successful than Mr. Fitch in making crosses on the Jersey with the effect of producing high milk and butter-yielding cows. This has been an especial business with him for more than 30 years. His herd numbers over 100 head of young and mature thoroughbred and cross bred animals, many of them being rich butter-makers, and all of them good. Mr. Fitch's announcement will be seen elsewhere.

Calcecake is the name adopted by the Averill Chemical Paint Co. for a very convenient article, which will allow those who wish to calomine their own walls to do so, if they have only ordinary skill.—The materials for the wash are in cakes, which need only to be dissolved in boiling water, to be ready to use. The shades are delicate and pleasing, and we have no doubt that the Averill folks have hit upon a most popular thing.

Lumps on a Horse's Shoulder.—"J. L. R.," Chillicothe, Mo. When collar-galls have irritated the bone of the shoulder, and hard lumps have formed there, they can not be removed; they are growths of the bone, and beyond the help of the surgeon.

Grass for Montana Territory.—"J. S. H.," Cheyenne, M. T. makes several inquiries, which we would have answered by mail, but he gave only the initials, as above. As stamps were enclosed, a reply by mail was probably looked for, but, of course, this is impossible. There is a hook on irrigation, in which all the information as to grasses for sowing, mode of preparing and cultivating the ground, making ditches, laying out meadows, and the manner of irrigating and

generally managing them, is fully given. This is "Irrigation for the Farm, Garden, and Orchard," by Henry Stewart, sent, post-paid, for \$1.50, by the Orange Judd Co. For planting along the ditches, the common cottonwood, or white willow, would be easy to procure, and would grow readily from cuttings. Oats should be sown as soon as the frost is over, and the ground is fit for working. Timothy-seed can be procured at Omaha, or Lincoln, Nebraska. The cost is about 5 cents per pound.

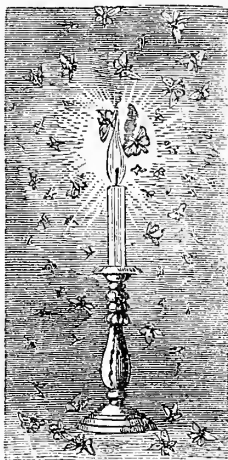
The Little Washer, made by Geo. D. Bissell & Co., Nantucket, Ct., having been advertised in our advertising columns for some time, we have received numerous letters concerning it. To such we would say: The washers in the market are of two kinds; in one the clothes are washed by rubbing, or squeezing, and in the other by a continuous flow of boiling suds over and through the fabrics. In an article on page 144, we have shown the difficulties that attend the introduction of all aids in washing, where the "help" (so-called because they hinder) are prejudiced against them: We have tried the "Little Washer" sufficiently to know that an intelligent person, one who is not "set agin" it, can make it a useful aid in the family washing. The same principle is employed in establishments for cleansing large quantities of fabrics. Where stupidity and prejudice combine against it, no domestic appliance is of any use.

The Asbestos Paints, made by the H. W. Johns Asbestos Mfg. Co.—To those who write, inquiring about these paints, we would say that we can not give a final opinion until five years after we have applied them. We can say now that they promise well. We used them last year on several buildings. The tints are pleasing, and the one who applied the paint found it to cover well. We used it upon both old buildings and new, and, judging from its workings, we should not hesitate, had we more painting to do, to use this.

Hybridizing Plants.—J. W. Tower. We wrote you a letter giving the title of the best work on the subject, but when we came to direct the envelope, we could not find the State—so our letter and yours kept company in the waste-basket.

Flax for Seed.—"J. B. G.," Rockwell, Iowa. When flax is sown for seed, one bushel per acre is sufficient. When it is thinly sown, the plants branch, and have many more seed-holls than when sown thickly. For the fibre, which should be fine, two bushels per acre are sown. Flax-seed should be sown early, about the time that oats are put in the ground.

Sundry Humbugs.



Alas for Russell & Co.! Has their glory departed? From a dozen of their circulars a day, the thing has gone down to three or more in a whole month! Those watches "valued at \$150.00," and those lots of jewelry "valued at \$250.00, \$280.00," and all sorts of other values—can they have been exhausted?...Our last intelligence as to this "Lot of Jewelry," comes from a jeweler in Laporte, Ind., who, just for the fun of the thing, had a \$280 lot of the "Jewelry" sent to him. He writes: "I find them to be a lot of very well finished, but worthless trash, the wholesale price of which

I would rate at \$5 to \$8."—Here is the testimony of an Expert, which those innocent people, who think that any one will give them more than a Dollar's worth for a Dollar, will do well to remember. Exit Russell & Co., but "powers behind the throne" are by no means dead. "Draw it mild," Messrs. E. & Co. Some one is now on the track of your latest developments.... We hope that our warning against

FARMERS GIVING NOTES

have been sufficiently strong and frequent to, at least, make the readers of the *American Agriculturist* stop and think a little before they get caught in such a trap as three of New Jersey farmers walked into. We again repeat, to not only farmers, but to all other readers,

BE CAREFUL HOW YOU SIGN a paper of any kind, AND TO ANY TRAVELING AGENT WHATEVER.—**DON'T SIGN ANYTHING.**

Many of these cases do not get into print at all, the victims bearing their losses in silence. The Trenton (N.

J.) "State Gazette" gives a recent case of this kind, and we mention it in brief, not to expose the folly of the victims—for men who are honest themselves are the most easily taken in by such scoundrels—but as a warning to others.

"Two men named Clarke" presented themselves as agents for a patent wind-mill. They sold the "right" (farmers, mind how you buy "rights," for they often turn out big wrongs), for Warren Co., to James De-roamer, Isaac Dehart, and Abraham Pursell. These gentlemen gave a note to these Clarkes for \$700.00. Having a note from well-known and well-to-do men, the Clarkes went to a neighboring town, where there was a bank, and had no difficulty in getting it discounted. But the Clarkes were well up in their business; they came back to the makers of the note, and told them that they could not get it cashed. The account ends thus: "The farmers then gave them \$700, since which time nothing has been heard of the agents, nor have the farmers received their wind-mill." We hazard nothing in predicting that those agents and that wind-mill will not be again heard of in Warren Co., N. J. The claps have made a clean \$1,400, and they will not again be found in Warren Co., or in any other Co. in New Jersey. Fourteen hundred dollars in a State no bigger than New Jersey is a big haul. Can we add anything to this plain statement of facts? This is a specimen of

THE SWINDLES UPON THE FARMERS

that are being practised all over the country. We would not say, "Have nothing to do with any traveling agent," as that would be unjust to many honest men who are engaged in introducing articles of real value to farmers; but we would ask every farmer to exercise proper business shrewdness, and to distinguish the swindler from the real seller. A few weeks ago a seller of mowing machine knife sharpeners, coaxed, worried, and finally bullied an honest man in Pleasantville, N. Y., into signing a note for a lot of worthless machines, and now the note is sued in a distant town, requiring as much expense for time and lawyers to defend, as the amount of the note itself (\$200). We may state it as a safe rule—if you can not make a trade without signing anything, you had better let that trade go by. The land is so full of swindlers, that there is no safety in any other course. So we repeat our caution—and it would be well if it were put up in large letters, where it can be seen daily—"With all strangers, with all traveling agents,

FARMERS, BE CAREFUL WHAT YOU SIGN."

Let no "Exclusive Agency," let no prospective profit, let no palaver of any glib-tongued salesman—no matter what he has to sell, no matter what hopes of a sudden fortune he may hold out—induce you to put your name to any kind of a paper. If one comes to you well recommended, if he is honest, he will willingly wait until you can find out if his credentials are true. Make no snap-agreements; jump at no great chances. Whoever comes along with an honest thing will be ready and willing to have it examined through and through. Deal with no others; and we now say to *You Farmers*—you for whom we have worked year in and year out in examining "Humbugs" of all sorts, we say, with renewed emphasis,

BE CAREFUL WHAT YOU SIGN.

MEDICAL MATTERS

are not many, but we can not say that they are dull this month, as we have one first-class one, worth a score of the common kinds. About a year ago, we saw a small sheet announcing it, but have only recently come into possession of the work, giving a full account of

"THE METAPHYSICAL DISCOVERY"

of one Mrs. Brown. In that remarkable paper, the "N. Y. Tribune," Mrs. B. speaks of her work as "the most valuable pamphlet in the world." We are quite sure that there is not another like it. "Metaphysical"—we should say so! We never met-a-physical, or physic-ing thing, that could begin with it. We can say, without any metaphor, that we never met-afore anything that proposed to work a greater metamorphosis in the system of medicine than this work; and we never met-a-physician who could meet and physic one equal to this metaphysician. The Indian doctors are nowhere. Metamora was a big Injun, but we never met-a-more astonishing piece of indian-doity than this metaphysical discovery. Whatever Mrs. B. may be on doctoring, none can dispute her literary ability in presenting her doctrine. We first received a paper called

"THE LEASE OF LIFE,"

which professes to be issued by the "Metaphysical University in New York." The "Lease" is not "signed," but it tells us at the very top of the first page what it is. For it says: "When the MUCUS MEMBRANE connected with the nose is plugged up—for want of suitable moisture—the death warrant of the body—is signed." This plugging is awful business, for we read: "There never was a fever since the world began that was not produced from a plugged-up head." Has this anything to do with a "plug-ugly?" Is one who wears a

"plunged" on his head any more liable to a "plugged-up head" than another? We read that: "The head is the seat of life, also the seat of death," which makes it rather hard on the head. But what can one do with a "plugged-up head?"—Ah, here we have it.

"THE METAPHYSICAL DISCOVERY"

courses through the *head* and *trunk* of the *body* as the rivers of the Sea course through the earth." And when we read below that "LANGUAGE FAILS to unfold the Treasure contained in the METAPHYSICAL DISCOVERY," we find the first statement with which we can agree—just so... Mrs. Brown has got this disease business down to a dot. She starts with asking us to "Consider that the Body is the Earth."—Well, we have seen some bodies where that consideration was not a difficult one.—"The hair is a field of grass," (that, probably, is the reason why some people have "hay-seed" in their hair.) "The eyes and ears are plants." This "Discovery" doesn't go around the body sort of promiscuous like, but it finds its way in through the eyes, ears, and scalp. So, to carry out the agricultural similes, she has "dew" for the eyes, and "rain" for the ears, and some stuff for the scalp analogous to "frost and snow," and we should judge by the venerable gentleman she uses so freely for a "figger-head," whose scalp is as bare as an egg-shell, that he has been subjected to pretty hard treatment, which is not surprising when we are told that the "Scalp-Renovator" is the "most thorough, logical and gentle cathartic in the world," and that it "enters the system through the canals of the head, and works wonders." Besides this remarkable paper, there is a large pamphlet of over 80 pages, filled with such farrago. A remarkable thing about it is the way in which Scripture is quoted; some of the allusions bordering closely upon profanity.

THE SAME OLD TUNE TO NEW WORDS.

There came to us a few days ago, a letter from a correspondent in Wisconsin, which enclosed a written circular, with the printed heading:

"CLARK & CO., ADJUSTERS OF CLAIMS IN THE U. S. AND EUROPE.

1,267 BROADWAY, NEW YORK, (22d February, 1878.)

N. S. T., Esq.:

DEAR SIR.—Is this your signature on the inclosed slip of paper? If so, you are entitled to a certificate of gold-mining stock valued at five hundred dollars. The money you sent in the letter, from which the inclosed slip was clipped, was invested on the general margin principle, which resulted in lawfully securing for you the certificate of stock referred to above. Now, if you will write to us, and return the inclosed slip, so we can compare it with your signature, we shall be sure the proper party will receive the stock. Respectfully, CLARK & CO. P. S.—State whether you wish the stock sent by registered letter or by express. C. & Co.

Within this letter was a small "slip of paper," which had evidently been cut from a letter to which it was the signature, on which was

"Respectfully, &c., N. S. T. —
Box 97."

This our correspondent admitted to be his genuine signature, but how it came into the possession of the New Yorker, was more than he knew, but being convinced that the whole thing was a "humbug," he left it with us to do with as we pleased. As the matter seemed worth looking up, we called upon Special Agent Sherrett, who has a sharp scent for frauds, and a most decided method of dealing with them when found. We saluted him with the information that we had a new scheme. "So have I," he promptly replied, "I was just thinking of you, as I have a bran new one."—We gave him our documents, and he had not read two lines aloud, before he placed his hand upon a letter upon the desk before him, and handed it to us, with a "look at that!"—and as he read the letter we had brought, we followed the lines, upon the one that had just been received by him, and, with the exception of the name of the person addressed, the two were the same, word for word. He informed us that he had been to the place, a building far up Broadway, in which offices are rented, but could find no one in. "I'll tell you what it is," said this shrewd officer; "this is another development of that old silver mining scheme, Russell & Co., and all the rest of it, and you'll find Elias at the bottom of it."—We became interested in the matter, and had one of the discreet and confidential young men in our office, try to find Clark & Co., and learn about the "stock." He had to make several visits before he could find any one in the building who knew of such firm; but at last ascertained the room occupied by these "adjusters of claims," and by going out of business hours, caught some one "at home." A very barren office had a few chromos setting upon the floor against the wall, there was a most venerable desk, and a stove, which, with a well-to-do-looking person with a gray beard, (and whose identity is more than suspected), mainly completed the furnishing of a most desolate place of business for parties engaged in adjusting "claims in the U. S. and Europe." The correspondent had sent us an order to get the money for that \$500 worth of stock, and our representative made

known his business. Immediately the venerable individual became a "known-nothing"; he wasn't "Clark & Co." at all; he only "represented" them. His business was selling chromos and jewelry, though there was nary a jewel visible. But he did know enough about "Clark & Co." to be sure that in the press of their "immense business," this letter was all wrong. It was misdirected in the hurry of their overwhelming biz. That letter was not intended for that particular man—a likely story, as the enclosed signature clipped from some letter exactly corresponded with the direction on the outside of the envelope. Not a blessed word of information as to stock, or anything else, could be extracted from their representative, concerning "Clark & Co." He was drier than a cod-fish—and our representative came away, leaving him with his chromos, his very rickety desk, and his stove, to report progress. But other parties had an interest in "Clark & Co." A gentleman in Missouri had received a letter, word for word like that of our Wisconsin friend—and another in Fall River, Mass., had been similarly favored, and both of these sent their documents to Superintendent of Police, Walling, who put the ease into the hands of Capt. Williams to "work up." Capt. W. visited the business place of "Clark & Co." several times, but no one was in. Knowing that these chaps—whose doings are entirely by mail—would be likely to be "at home" to the letter carrier, awaited his time; the letter carrier appeared, the door was opened at his knock, and Capt. W. nabbed the young man who opened it, (not the venerable citizen of the day before), and marched him and his bundle of letters to the station house. The young man convinced the officers that he knew nothing of the business of "Clark & Co."—and he was discharged to appear when required. That this firm—which has no real existence—was doing a flourishing business, is shown by the fact that, at this hour, fifty-seven letters were taken, which were turned over to Postmaster James, to be sent to the Dead-Letter Office, where all letters addressed to "Clark & Co." will bring up. It seems that those silly enough to catch at the bait, and say that the enclosed "signature" (see letter above) was theirs, were served with certificates of stock—very pretty certificates they are said to be—and with these a bill of charges for "commissions and expenses." Here is where the profits came from. As it would be some time before the fraud would be found out, "Clark & Co." were doing a flourishing business—as the fools are by no manner of means anything like all dead yet. Indeed, worse than fools—for there were a most lamentably large number, one mail brought 57 of their letters, who, in the hope of getting "a certificate of gold mining stock," were willing to admit the statement to be true, that they had sent money "in the letter from which the inclosed slip was clipped," and thus acted upon what they knew to be a lie, because they expected to make something by it. These persons are not one whit less dishonest than "Clark & Co.," and we think it a great pity that their names could not be made public—though this punishment could hardly be equal to that which each one must receive, when he thoroughly despises himself, for having admitted a lie, in order to allow a gang of scoundrels to swindle him! But, the question will be asked:

HOW DID "CLARK" & CO. GET THE SIGNATURES.

The police authorities think they were procured through the dishonesty of some postmaster. It could hardly be practicable to purloin many thousands of letters from any one Post-office. We think it more likely that they were picked up in junk shops, where the "waste" of hundreds of large establishments is gathered. Unimportant letters are thrown into the waste-basket entire, without even being torn across. A junk-shop is often a well-worked mine for dealers in signatures. As we have stated that there is no such concern as "Clark & Co.," the question will be asked

WHOSE FUNERAL IS THIS?

The young man arrested with the letters, by Captain Williams, said that he was employed by "Elias Brothers."—"Here we are again."—"Now you see it, and now you don't."—It showed the shrewdness of our friend the Postal officer, who, with the same acuteness that allows an Indian to tell the tribe to which another belongs by the prints of his moccasins, saw in the letters and ways, as the frontiersmen say, "fresh sign" enough to induce him to conclude that the tracks of "Clark & Co." were made by the tribe of Elias. And the man that our representative found "representing Clark & Co." at the office, but who did not "represent" worth a cent? *Par nobile fratrum*—they could not be long separated, and wherever the Eliasas are, he will not be found far away. He was then "representing Clark & Co." No doubt he had rather have been at home, teaching his children, if that breed is allowed to be perpetuated, that charming nursery song, "Pat-tee cake, pat-tee cake, baker's man." We have given more space than usual to this one swindle, as it shows how deep-laid and well-guarded are these schemes; and will show those good people who freely ask us to "please investigate, and reply by return mail,"

that these investigations are not so easy as they seem at a distance. Some may wonder why the Elias Brothers were not arrested. Simply because no citizen of the State of New York has made a complaint against them.

The Ailanthus and its Uses.—Prof.

Chas. S. Sargent, Director of the Arnold Arboretum of Harvard University, and also a member of the Mass. State Board of Agriculture, has contributed to the Annual Report of the Secretary of that Board, some most useful "Notes on Tree Planting." The portion of these notes which we have read with the most interest, is that relating to the economical value of the Ailanthus. The *American Agriculturist*, in spite of much ridicule, long ago recommended this tree as one, that for its rapid growth, and its usefulness for fuel and timber, was well deserving the attention of tree-planters. It is true that the tree has one, easily avoided fault, which cannot, in the mind of any sensible person, offset its usefulness. We know of no work in which the reasons for planting the Ailanthus are stated more in full, and forcibly, the opposite side having a fair showing, than in this paper. Prof. S. quotes an example which we some years ago referred to, of a set of furniture made of Ailanthus wood, which can not fail to convince any one of its utility for such work. The paper is by no means devoted exclusively to the Ailanthus; he gives other matters that will be of great use to the increasing numbers of tree-planters in Mass., and of equal value in other parts of New England—indeed we may say to the country at large—for all earnest workers, like Prof. S., "build stronger than they" know.

Heebner's Level Tread Horse-

Power.—A horse-tread power, made by Heebner & Sons, of Lansdale, Pa., possesses a very notable improvement. It is in the raised position of the lower edges of the treads or lags upon which horses move, that this improvement consists. This brings the tread planks in a very easy position for the horses, so that there is little or no strain upon the muscles or tendons, and less fatigue to the animals. This peculiarity belongs specially to this machine, and gives it a prominence amongst other machines, which renders it worthy of more than usual notice.

Pressure at Paris.—The Boomer & Boschert Press Co., of Syracuse, N. Y., whose remarkably powerful presses attracted so much attention at the Centennial, have sent a specimen press, which will no doubt astonish the wine growers, to the Paris Exposition.

"Vegetable Plants" is the title of a work by I. F. Tillinghast, of Tillinghast Bros., Factoryville, Pa. In this work, they give the methods which they have found successful, especially with late cabbage. It has received the commendations of a number of practical growers. The terms on which it may be obtained are given in the advertising columns.

The Treatment of Sick Cattle.—

Probably one half of the letters addressed to the editors, relate to trouble with domestic animals. The present season is one when the greatest care is required to prevent disease in our cattle and other live stock. To prevent, is much better than to cure; and in general it is vastly easier. To prevent disease, it is necessary to know the cause of it, what it is, what symptoms are to be looked for at the outset, and the best method of treating disorder at the very start. A trustworthy *hand-book* giving the proper care of cattle, and the treatment of their diseases, is indispensable to every farmer; yet, a very small proportion of the owners of animals possess any book of the kind. The cost of one of the best of these books would be repaid by the prevention of the loss of one week's milk of a sick cow, the saving of a lamb or young pig, to say nothing of the avoidance of more serious losses. Dadd's "AMERICAN CATTLE DOCTOR," is a standard work of this kind, and will be found of the greatest value in every farmhouse. It is published in two forms; one at \$1.50, and one at \$2.50, sent by mail, by the Orange Judd Co.

Just a Mere Mention.—Pamphlets and

other publications of minor size, but of great intrinsic value, come to us, and we put them aside, hoping for the space in which to give them proper notice, but which never comes. We find, awaiting notice, numerous documents which we must now acknowledge merely by title, or not at all....THE SUGAR BEET in North Carolina, by Prof. A. Ledoux, chemist to the Department of Agriculture of that State. A valuable contribution to our knowledge on an industry which must ultimately become of great importance in every State....THE MENHADEN FISHERY OF MAINE, with reference to its relations to Agriculture, and also as a source of human food. A valuable contribution to all who live on the coast, and fully illustrated by engravings and maps...."A List of the FUNGI found in the vicinity of Boston," by Prof. W. G. Farlow, is not merely of interest to botanists, but to those who would investigate the attacks of fungi upon useful plants....A

similar remark may be made of a paper with the unattractive title of *THE ERYSPHEI*, by Prof. C. E. Bessey, of the Iowa Ag'l. College, in which he describes, and figures some of, the minute fungi that injure our fruit and other trees.... "THE AMERICAN JUNIPERS," "THE OAKS OF THE U. S.," and "THE AMERICAN FIRS," are papers of interest to every nurseryman; and when we say that they are by Doct. Geo. Englemann, of St. Louis, Mo., their scientific value will be admitted by all.... *VENNORS' ALMANAC*, Montreal, Canada, J. Dougal & Sons, is a very full work of its kind, and claims that its weather predictions have been fulfilled to a remarkable degree.... *THE REPORTS* from New Jersey, for 1877, are interesting documents; we have that of the Rutgers Scientific School; the general report of the State Geologist, Prof. Geo. H. Cook, and a special report on the extensive Clay Deposits of the State, which cannot fail to have a high economic value.

Help for the Flower Garden.—We have shown the difference between the modern style of flower gardening, in which the effects—and often most brilliant ones—are produced by massing flowers and foliage; and the older style, in which plants, so to speak, stand on their own merits and are grown as individual specimens, each for its own sake, and without any reference to its effect in a mass. Those who really love flowers, like to read about them, and wish for something more than the mere directions as to their planting and treatment. We know of no work more gratifying in this respect, than Breck's *NEW BOOK OF FLOWERS*. The author, when he had reached an advanced age—about 70, we think—so revised, indeed almost entirely re-wrote his former "Book of Flowers," as to warrant the prefix, "New," to the title. The author's personal experience is told in a charming style, and show how great was the love for flowers which he held through a long, busy, and useful life. We would not imply that the work omits all notice of the use of plants in masses, as it gives sufficient directions for this style of gardening; it is devoted to the description of annuals, biennials, and perennials of all kinds, and of course includes, the "bedding plants;" also ornamental shrubs. Sent from this office by mail for \$1.75.

Protecting Seed against "wire-worms," mice, and other vermin.—"R. W. D.," Flint, Mich., writes that the following method of treating seeds is sent him from England, and he wishes to have it tried in this country and reported upon. It has long been in use in England, as we see it frequently mentioned in the journals. It consists in the use of Red Lead, in the proportion of half a pound to a bushel of seed grain, peas, or other seed. The seed is first moistened with water, and the dry Red Lead sprinkled over it, stirring to secure an even coating. Spread the seed to dry, and then sow.

The Buckeye Mowers and Reapers.—The Buckeye Mowers and Reapers, made by Messrs. Adrians, Platt & Co., of 165 Greenwich St., New York, have long held a very high position in public estimation. While many great and very useful improvements have been made in agricultural machinery during the past few years, the Buckeye machines have kept pace with the foremost in all respects, and have maintained their popularity in spite of the strongest competition. The new Model Mower, wholly of iron and steel, is really a model of beauty, lightness, and effectiveness, and the new reaper has every appliance that can make it desirable and effective in the harvest field.

Special Crops—Special Instructions.—By these we mean crops not included in the usual farm rotation, but which require a different treatment from the ordinary crops, either in their cultivation or their preparation for market. If one farmer happens to make a hit with a crop of this kind, for example with hops, so soon as his success becomes known, hundreds of others, without properly considering if their soil is suited to the culture, or if they can handle the crop when raised, will rush into hop raising blindly, and lose money. Hundreds of others, more cautious than these, will write to us and ask us to give a full account of hop culture, from the planting to the marketing. As with hops, so with several other special crops, such as tobacco, flax, etc. As there is a great deal of detail concerning each of these, and as the processes vary in different parts of the country, it would take more space in the *American Agriculturist* than could be properly devoted to them, as they would be of interest to but a very small portion of the whole number of readers. In view of this, we several years ago adopted the plan of offering prizes for essays by practical growers of these special crops, thus procuring the freshest and most trustworthy information, and the prize essays, with the most important of the others, were published in a pamphlet form, at a low price. These pamphlets, we are sure, contain the best information concerning these special crops, to be found anywhere in print, as they give in detail the practice of experienced growers. They are worth more than they cost, if they

only show one that his land is unfitted or his means are unsuited to the particular culture of which they treat.

If one wishes to know all about Hops, from the planting to the curing, baling, and marketing, let him send for our treatise on *HOP CULTURE*, in which is given the experience of ten different cultivators. Price, 30 cts.

The culture of Tobacco is presented in the same manner, the experience of fourteen growers in one pamphlet on *TOBACCO CULTURE*, which can be had for 25 cts.

Those who think their land suited to ONIONS, can get the story as told by seventeen persons (most of whom have grown the crop all their lives in the best onion districts,) in our *ONION CULTURE*, which is sent for only 20 cts.

The FLAX crop is similarly treated, the essays of a number of experienced growers being collected in our pamphlet on *FLAX CULTURE*, which may be had for 30 cts.

Another special crop, which has recently attracted much attention, is Broom-Corn. Our work on *BROOM-CORN AND BROOMS* not only gives the best cultural directions, but shows how the product is worked up into brooms. As this required a number of engravings, the price is a little higher—50 cts. in paper, and 75 cts. cloth.

The practical character of the above-named works is such, that one who contemplates a trial of either of these special crops, can not afford to do so without first consulting their contents, and learning not only what others have done to attain success, but what to avoid.

Calibre of Shot Guns and Rifles.

—The diameter of the bore of shot-guns is usually indicated by numbers—No. 10 and No. 12 being the sizes most in use. No. 10 is a trifle over 11-fourteenths of an inch, or about 4-fifths of an inch. No. 12 is just three-quarters of an inch inside diameter. The "Forest and Stream" gives the following as the exact measurement: No. 8 is 860-thousandths of an inch; No. 10 is 793-thousandths; No. 12 is 750-thousandths; No. 14 is 715-thousandths; No. 16 is 685-thousandths; No. 18 is 650-thousandths (?); No. 20 is 627-thousandths—the lowest numbers being the largest, and the highest numbers the smallest.—The calibre of rifles, (target, Creedmoor, sporting, army, etc.) is expressed in *hundredths* of an inch. Thus: 50 calibre means 50-100ths, or exactly half an inch. The favorite long-range rifle is 44-100ths of an inch. Target rifles and pistols run all the way down from 44-100ths to 22-100ths, the last being about the size of medium buck-shot.

Horticultural Societies have favored us with their reports, but we can only acknowledge them with our thanks.... The Ag'l. and Hort'l. Society, of Montreal, Canada, send reports of their Fruit Committee, full of valuable information.... The Western N. Y. Hort'l. Society, of which P. Barry is Pres't., hold a meeting, have sensible talk, and get out their report at once, which doubles its value.... The Minnesota Hort'l. Society, send a handsome volume full of matters of interest to all who live in that State or a similar locality.... The Pennsylvania Fruit Growers' Society is doing much good. Its last report is well illustrated; and when we say that Josiah Hoopes is President, it will be understood that things move, one way or another, and that very quick.

An Agricultural Journal in Japan.—Japan is a constant wonder. Having shut itself out from the world so long, it would seem to have devoted this seclusion to preparing itself to accept the best that other countries had to offer, whenever intercourse should be opened. To be sure, it has made some mistakes—but very few. It started an "Agricultural College," which some of our older States and other countries find a great puzzle, and do not know what to do with it, now that they have it. But the Japanese are shrewd enough to distinguish the ornamental from the useful, and in starting an Agricultural Journal, are evidently getting upon the right track. This journal has a handsomely illustrated title page, which, as it is their custom to begin their books "hind side before," is at what we should consider the end of the work. It has, besides the cover, 20 pages of teachings which we have no doubt are excellent; including an illustrated article on the grapevine. We wish our Japanese fellow laborer much success.

Schedules of Prizes, have been received from the N. Y. Hort'l. Society, offering abundant prizes for the spring, fall, and other shows.... The Worcester Co., (Mass.), Hort'l. Society sends a schedule which shows this useful association to be wide-awake.... The Mass. Hort'l. Society, offers only about \$4,500 in their various prizes, and we think shows no sign of collapse.

Percheron and "Percheron-Norman" Horses.—"C. W.," Freeborn Co., Minn. The true Percheron horse is not a large-boned, long-legged, loosely built horse, but many of the half-bred so-called Normans are. There have been many trashy coarse misshapen horses imported into this country as Percherons, which have brought discredit on the race, and an effort is

now making to let these down easy by calling them "Percheron-Normans," a name which signifies only that they are not Percherons. In selecting a horse for breeding, one should not be misled by the large size and great bone. Compactness of frame, fine bone, well knit joints, a clear, bright, intelligent eye, broad forehead, a short round barrel, good chest, and good temper, should be looked to before monstrous size. The breed is well described in "The Percheron Horse," translated from the French, sent from this office, post-paid, for \$1.

Exports of Meat, Butter, and Cheese.

—The exports of meats, live-stock, and dairy products for the period from January 1st to March 31st, 1878, in comparison with last year, are given as follows:

Jan. 1. to Mar. 31, 1878.	Value.	Total for 1877.
Fresh Beef, 12,261,440 lbs.	\$1,112,567	101,971,504 lbs. \$10,047,699
Mutton, 4,355 "	20,837	2,114,240 " 119,560
Sheep, live, 4,069 "	23,425	13,176 63,960
Cattle, live, 2,174 "	260,825	20,057 2,987,740
Horses, 479 "	71,550	4,668 750,220
Mules, 1,013 "	161,189	1,670 283,900
Hogs, live, 765,000 "	39,599	284,000 " 17,040
and dressed, 17,619,839 "		
Butter, 118,425,531 "		same time last year, 13,566,110 lbs.
Cheese, 118,425,531 "		82,837,668 "

While the exports of meat and live-stock, with the exception of sheep and mules, have decreased somewhat, the very large increase in dairy products is noteworthy. It is of interest also to note here the growth of shipments by way of New Orleans, of Western products, as shown by the following figures, viz.:

Shipments of Corn from N. Orleans, Sept. 1, '77, to Mar. 1, '78
 1877... 789,136 bushels
 1878... 3,709,522 } Increase 1878, 2,926,386 bushels.

The shipments of wheat from this port, also show a marked increase the present year.

A Poland-China Record.—A meeting of breeders of Poland-China Swine in the United States and Canada, was held at Cedar Rapids, Iowa, January 23, 1878, at which it was agreed that a record, for registering the pedigrees of this breed of swine, has become a necessity. For the purpose of publishing such a record, an incorporated company was formed, every breeder present becoming a stockholder. The following officers were elected: President, W. P. Sisson; Vice Presidents, B. F. Dorsey, Jos. Morton, Wm. A. Macy, S. A. Clark; Secretary, J. T. Mitchell; Treasurer, J. C. Traer. A standard of entry was agreed upon, and an Executive Committee appointed, who will pass upon all pedigrees. A report of the proceedings can be obtained of the Secretary, at Cedar Rapids, Iowa, for 15 cents.

The N. Y. Horticultural Society's monthly meeting, held on March 5th, was by far the best attended of any since the organization of the Society. Besides many professional gardeners, quite a number of amateurs were present. The display of Hyacinths in pots was unusually fine. The first premium was awarded to Mr. Rohers, florist, of Jersey City. He was followed closely by James Murkland, of 12 Cortlandt street, whose plants, considering that they were grown in an ordinary sitting-room, were highly creditable. A dozen fine specimens of Double Geraniums, exhibited by Mr. Reynolds, of Flatbush, L. I., were awarded a special premium. George Such, of South Amboy, carried off the \$20 premium for cut-flowers, offered by the President of the Society. Fine specimens of Cyclamen and "Cornelia Cook" Roses, sent from Mr. Jones, gardener, at Madison, N. J., took a special premium. An interesting lecture, given by Mr. Boileau, on training and pruning Pear-trees, was received with marked attention. A paper from Dr. John A. Warder, of Ohio, suggesting a "Governmental Bureau of Forestry," was received rather coldly, the Society evidently having the idea that there are already about enough of such Government Bureaus. Henry Ward Beecher, of Brooklyn, and Thomas Meehan, of Germantown, Pa., were elected honorary members.

For Boys and Girls, and other players of games.—When Aunt Sue gets hold of a pleasing game, she naturally hastens to tell others about it; hence, when a lady showed her the game of "Word Making," given on page 145, she at once sent it for the Boys and Girls' Department. Having somehow got the impression that "Logomachy" was one of the names of the game, she gave that as one that you might use, if you liked it better than "Word Making." She has, since the article was printed, (that part of the paper being on a separate sheet, and printed a week or more before this), discovered that "Logomachy" belongs to a different game. It is a name for a game invented by a gentleman in Ohio—Mr. F. A. Wright—and one which we have no right to use for a different one. Of course neither Aunt Sue nor ourselves, knew of this, when the article was put in type, and a part of the sheets were printed before the accident was discovered. The mistake has been remedied in a part of the edition; those of you who may get a paper in which "Logomachy" is given as one of the names of the game,

are requested to draw a pencil through that word, to remind you that it belongs to a very different game. But good things are often hit upon by more than one person, and it now appears that the game described by Aunt Sue, though quite unlike Mr. Wright's, is similar to one offered for sale by C. E. Hammett, Jr., a well known bookseller, of Newport, R. I., who furnishes the boxes of letters, with printed directions for playing the game, which he will furnish by mail, post-paid, at 27 cents. We may add that we hardly know of any other way in which this small sum will afford so much amusement, as besides the game referred to, the same letters may be used for various other games described by Aunt Sue.

Percheron Horses.—A meeting of importers and breeders of Norman or Percheron horses, was held at Peoria, Ill., on February 14th last. The chief object of the meeting was the change of name of the Association of breeders and importers of Norman horses, and the addition of the word Percheron before the word Norman. This object was accomplished. The stud book will now be called "Percheron-Norman." A motion to the effect that the Percheron and Norman horses were one and the same breed, was laid on the table. This is well, as all the "resolving" would hardly change the fact that they are different horses in many respects. Only imported horses, native full bloods, and animals having five pure crosses, can now be admitted to the stud book.

Scurvy in Poultry.—"A. C.," St. Mary's River, Ga., sends the following account of a fatal disease affecting fowls in his locality, which he calls "warts." "The warts begin to show themselves with warm weather—(here, our climate is nine months summer, and three of spring), generally about the head and neck, working towards the mouth and around the bill. They resemble the human 'small-pox.' The pustules are filled with yellow-colored matter. If the warts get into the mouth, the bird is choked, as the tongue and throat swell up, as in diphtheria. As remedies, sulphur, gas-tar, kerosene, etc., have been tried in turn, and failed. The birds, as well as chicks, are attacked. Sometimes the whole body is affected, when the feathers fall off. Turkeys, likewise, have the disease, but 'water-fowl,' such as geese and ducks, in the same yard, are perfectly free from it."—The disease is scurvy. It is, fortunately, rare, because, when it attacks a flock, it generally destroys the whole, unless measures are taken to stop it. These are, to administer to each bird ten grains of sulphur and one grain of calomel, every alternate day; and to apply to the diseased parts an ointment, made of one ounce of sweet oil, mixed with one-third of an ounce each of sulphur and turmeric. The disease is in the blood, and is not warts, by any means. To prevent its spreading, give chopped fresh vegetables and boiled oatmeal mush to the other fowls; and put in the drinking water enough Aromatic Sulphuric Acid (Elixir of Vitriol) to make it decidedly sour to the taste. Also, separate the sick birds from the well.

The Pip in Poultry.—"W. T. W.," Dutchess Co., N. Y. Poultry are sometimes troubled with a disease known as "pip." This is inflammation of the tongue and mouth, with the growth of a horny scale on the point of the tongue, which prevents the fowls from feeding. Give each fowl a pinch of powdered chlorate of potash, dropping it into the throat and upon the tongue, and remove the scale with the point of a penknife.

Fresh Manure bad for Potatoes.—"J. H. T.," Palmyra, O. Fresh manure is hurtful to potatoes. This crop needs old well-rotted manure, or the tubers are apt to be scabby, and to be infested with white worms. Fresh manure may be used for corn without any ill effects. The corn rather likes it. There are no potatoes so clean and free from blemish, as those grown with the artificial fertilizers.

To get Land under Grass quickly.—"A. M. D.," Portsmouth, Ohio. After a wet piece of land has been underdrained, it may be best seeded by plowing and sowing with oats rather thinly. Oats succeed well upon cold moist ground, and upon a sod, and if there are no more than 2 bushels of seed per acre used, the grass seed will take very well with this crop. A mixture of 4 quarts of timothy, a bushel of red-top, and a bushel of blue-grass per acre, would be preferable.

Catalogues of Dealers.—A list of the catalogues received since those acknowledged last month will be found on page 153. This, together with the remarkable variety of advertisements, can not fail to interest all intending to purchase.

Culture of Potatoes.—"H. T.," Portage Co., Ohio. For general planting, now that the potato-beetle is with us as a permanent companion, the early varieties of potatoes will be preferable. Of these

the "Early Rose" is yet a standard sort. The "Snowflake" is one of the favorite new varieties for field culture. "Early Vermont" has been found to succeed in some localities, and is worth trial, and there are several still newer early kinds that promise to be valuable. Late potatoes, in the East at least, have mostly succumbed to the beetle, and have been an almost total loss, or have cost more to save than they have been worth. Drill culture is undoubtedly the most profitable. With drills 24 to 27 inches apart for the early kinds, the seed may be dropped in single sets 9 inches apart, or two sets in a place, 18 inches apart. The earlier the ground is prepared, and the sooner afterwards the seed is planted, the more forward will be the crop, and the better able to resist the beetle. Last year the earliest potatoes suffered very little, and Paris Green could not save the late ones.

The Ground Nut, *Apios tuberosa*, was figured and described in January, 1877. It was there stated that the root was one of the many things offered several years ago as a substitute for potatoes. We had not then made a trial of the tuberous root, having never seen any large enough. Last fall, Mr. E. S. Miller, of Suffolk Co., (L. I.), N. Y., sent us a fine lot for planting; there were a few among them about as large as a black walnut—very black-coated and unpromising looking things they were. We had these boiled, and though when served their appearance was by no means attractive, we found them really palatable; quite dry and somewhat sweetish, and with a flavor somewhat between that of a sweet potato and a boiled chestnut. We do not know how long it takes to grow a root like the largest of these, but when grown, and one has a plenty of them, it would take him a long time to starve to death.

To Rid Hogs of Lice.—"W. E. G.," Henrico Co., Va. To destroy lice upon hogs, rub well into the bristles, along the spine, on the brisket, and beneath the arms and thighs, a mixture of lard and sulphur well rubbed together.

Diuresis in a Heifer.—"D. H. H.," Success, L. I. Diuresis, or excessive secretion of urine, may be caused by anything that will unduly stimulate the kidneys. Musty hay, smutty corn-fodder, mouldy meal, bran, or other food, or acrid weeds in the hay, all have this effect. The remedy is to seek out and avoid the cause, and to give mucilaginous drinks, such as oat-meal or linseed-gruel, with a teaspoonful of powdered Peruvian bark, and as much powdered sulphate of iron, daily.

Growing Beans.—"W. S. C.," Fulton Co., Pa. Beans are a valuable crop, and give very little trouble. The most troublesome part of their culture is to preserve them from rain after they are pulled, so as to keep their color perfectly. When damaged by wet, they become stained, and reduced in value. The crop could very well be added to the ordinary rotation—for instance, after oats—as they can be got out of the way in time for sowing wheat, and wheat succeeds better after beans than after oats. Besides there is one more cultivated crop in the rotation, and the wheat would be cleaner.

Belted Cattle.—We have numerous inquiries from many parts of the country for the belted cattle, which were illustrated in the *Agriculturist* for Dec. last. A reply will be found in the advertising columns.

The best Stock for a Milk Dairy.—"C. M. W.," Orange County, N. Y. The best cows for a milk dairy are grade Shorthorns. They milk plentifully, giving rich, high-flavored milk, and the cream does not rise rapidly upon it. This renders the milk most suitable for shipping to a city or town market. By good feeding, cows of this kind are kept in good flesh, and when failing in milk, they fatten with rapidity. We cannot see how a milk dairyman can afford to raise calves. Profit is only made from milk, and a dry cow soon "eats her head off." A good supply of dairy cows is to be found in Southern N. Y. and Northern Pa., in the region of the head waters of the Delaware and Susquehanna rivers. A good class of stock is kept there bred to supply purchasers.

"Plain Facts About Florida" is the title of a pamphlet by Geo. W. Dow, Ferdinandina, Fla. We are rather careful in noticing works about Florida—at least those written with a view to induce emigration thither. The impression prevails, as our correspondence shows, that the advantages of the State have been overpraised, and that many persons have been, by glowing descriptions, induced to go there, who would, if they only could, gladly get home again. This is true of all emigration fevers. We do not believe in such fevers, and our advice has always been, with reference not especially to Florida, but to any other State—Don't move to or locate anywhere, without first visiting the place, and seeing the land. Those, whether individuals or companies, who have land to sell, will present all the at-

tractions of the locality, be it in Florida or Alaska, and utterly ignore the drawbacks, and will continue to do so, as long as human nature remains as it is. We think that this little book of "Plain Facts" is very moderate, especially when we read on p. 13, "Mosquitoes and sand-flies are an incumbrance that Florida will never be free from," and that, "Fever and ague prevail in some localities at certain seasons." Evidently the author has eyes to see both sides, and he will prove in the end a better friend to the State than those who represent it is a paradise, which one has only to reach to enjoy and prosper. Sent from this office, post-paid, for 25 cents.

Basket Items continued on page 152.

Exports of Agricultural Produce.

The exports of agricultural products for 1877, were as follows:

Breadstuffs, (which include all kinds of grain).....	\$140,068,087
Cotton.....	158,258,286
Oil-cakes.....	4,276,050
Provisions.....	109,723,172
Seeds.....	2,565,733
Tobacco.....	28,497,479
Fruits.....	1,836,918
Total.....	\$445,225,725

The total exports during the year were \$671,632,366. The products of agriculture furnished, therefore, more than two-thirds of the whole of our foreign exports. This is a fair test of the relative importance of the agricultural interest, as compared with other national industries. When we compare the proportionate demands made by other industries upon the Government for recognition and assistance, with those afforded to agriculture, a very conspicuous inequality is apparent to the disadvantage of the latter. Farmers are permitted to get along as they can without help, and in spite of some hindrances, while other industrial classes clamor for help and get it. If we add to the above figures the vast amount of inland traffic supplied by agriculture, the comparison would be very much more in its favor in one way, and its disadvantage in that pointed out.

More About Farm Experiments.

The following is in addition to the general article, with the above title, given last month, on page 86. An editorial, page 131, gives a summary general view of the object and aims of these experiments; and Prof. Atwater discusses the subject on page 130. It will be noticed that some important additions are made to the "extras," while the regular Set A is unchanged:

Experimental Fertilizers.

Bag No.	MATERIALS.			Price per bag.
	Kind.	A-mount.	Valuable Ingredients.	
SET A.				
I.	Nitrate of Soda.	20 lbs	Nitrogen.	\$ ct
II.	Dissolved Bone-Black.	30 "	Phos. Acid	1.00
III.	Muriate of Potash.	20 "	Potash.	.60
IV.	{ Nitrate of Soda.	15 "	{ Nitrogen.	1.40
	{ Dissolved Bone-Black.	30 "	{ Phos. Acid }	
V.	{ Dissolved Bone-Black.	30 "	{ Phos. Acid }	1.25
	{ Muriate of Potash.	20 "	{ Potash.	
VI.	{ Nitrate of Soda.	15 "	{ Nitrogen.	1.90
	{ Dissolved Bone-Black.	30 "	{ Phos. Acid }	
	{ Muriate of Potash.	20 "	{ Potash.	
VII.	Plaster.	20 "	—	.15
PRICE OF SET A				\$7.00
EXTRAS.				
Ia.	Sulphate of Ammonia.	15 lbs	Nitrogen.	.95
Ib.	Dried Blood.	25 "	Nitrogen.	.80
IIIa.	Sulphate of Potash.	20 "	Potash.	.85
IIIb.	Kainit.	30 "	Potash, &c.	.35
IVa.	{ Dried Blood.	20 "	{ Nitrogen.	1.25
	{ Dissolved Bone-Black.	30 "	{ Phos. Acid }	
VIII.	Pure Bone-Meal.	50 "	{ Nitrogen.	1.25
			{ Phos. Acid }	
IX.	Fine Bone Dissolved.	50 "	{ Nitrogen.	1.25
			{ Phos. Acid }	
X.	Dry Ground-Fish.	50 "	{ Nitrogen.	1.20
			{ Phos. Acid }	
XI.	No. 1 Peruvian Guano.	40 "	{ Nitrogen.	1.40
			{ Phos. Acid }	
			Potash.	
XII.	Rec. Guano, "Oneco,"	50 "	{ Nitrogen.	1.50
			{ Phos. Acid }	
			Potash.	
XIII.	{ Nitrate of Soda.	15 "	{ Nitrogen.	1.30
	{ Muriate of Potash.	20 "	{ Potash.	

Each article will be put up in a small bag, numbered I., II., III., Ia., etc., as above. Nos. I. to VII. will be put in

a large bag, as "Set A." The price of "Set A" is \$7. The small bags will be packed together in large bags or boxes for shipping. To last month's list of extras, we have added Kainit, IIIb, and rectified Peruvian Guano, brand "Oneco," and thus include samples of all the more important kind of artificial fertilizers in the markets. The "Oneco" brand of guano differs in having a third as much nitrogen, and a good deal more phosphoric acid and potash, than the "Standard." No. IVa is a high-grade "ammoniated superphosphate." The pamphlet, with explanations and directions, which will accompany each lot sent, is prepared especially to tell what the farmers ought to know about the fertilizers and the experiments, and will describe at length the experience of farmers last season with similar ones. Blanks will also be sent for recording and reporting results.

Bees Notes for April.

BY L. C. ROOT, MOHAWK, N. Y.

In many locations bees, which have been wintered indoors, should be placed upon their summer stands this month. I can not too strongly warn persons against the common practice of removing bees from their winter quarters too early in our northern latitude. Unless the spring is unusually early, do not set them out until the first of May. The blossoming of the Soft Maple tree is a good indication of the proper time for each locality.

I am strongly opposed to the practice, so often advocated, of setting bees upon their summer stands before natural forage appears, and feeding to stimulate breeding, before the weather is sufficiently warm. Until this practice is discontinued, we shall be sure to suffer by what is known as "spring dwindling."

Many swarms of bees are placed upon their summer stands on April 1st, in fine condition, and before May 1st become so much reduced, that many of them never recover. When bees are taken out of the cellar, all ventilation should be closed, except at the entrance, and that should be contracted. Too much pains can not be taken to economize the heat. All openings in the top of the hives should be kept well closed. If movable comb hives are used, all combs, except those occupied by bees, should be removed, and a close-fitting division board be placed at the side of the combs left in the hive, thus contracting the space in the brood chamber in proportion to the size of the swarm. These directions apply also to hives that have been wintered out-of-doors.

The Parasites of the Honey Bee.

I have investigated this subject for two years past, and during the past winter have given it special attention. While examining the dust which is found upon the bottom-board under a swarm when wintering well, I discovered numerous minute insects. I have so far observed six different forms, but have not become sufficiently acquainted with them to determine whether or not they are all distinct. I have studied their habits, and the circumstances under which they are found, to such an extent, that I feel warranted in the belief that much of the uneasiness of bees in winter-quarters, and consequent poor success in wintering, is largely due to the presence of these parasites. My observations also indicate that the immature young bees which are often thrown from the hives during spring and summer, sometimes in large numbers, have been destroyed by these insects. These facts lead us very naturally to an explanation of what has been the greatest mystery and obstacle to bee keeping, viz., foul brood. I am decidedly of the opinion that both this plague, and its almost total eradication, are due to the operations of different varieties of parasites. Our experience with cabbage and currant worms, potato beetles, and other pests, whose devastations are sensibly checked by their respective parasites, corroborates this view. I find, upon a study of Packard upon "Our Common Insects," that the subject of parasites on honey bees has received considerable attention abroad, and that the cause of foul brood is therein attributed to the feeding of these parasitic insects upon the immature bees.

Weight of Swarms.

The amount of honey consumed during February, by the four swarms mentioned in previous months, is as follows:—No. 1, 1½ lbs.; No. 2, 1¼ lbs.; No. 3, 3¼ lbs.; No. 4, (the swarm kept out doors), 4¼ lbs.

Questions and Answers.

INTRODUCING QUEENS.—"When shall I introduce Italian queens into black stocks?"....The best time is when swarms are being increased. Make swarms artificially, and introduce the queens to such swarms. If the entire apiary is to be Italianized, the queens in the old swarms should be changed later in the season.

LEAVING SWARMS QUEENLESS.—"Is leaving the swarm queenless 7 days in June, compensated for by the Italians working on red clover?"....No. It is injudicious to deprive a swarm of a queen for this length of time at that season. With practice, queens may be introduced at any time during the working season, without depriving the

swarm of a queen, except for a short time. When all circumstances are favorable, one queen may be removed and another replaced at the same time.

ADDING COMBS FOR BROOD REARING.—I would add combs to the center of the brood nest, and allow bees free access to them, and not cover any part, as suggested.

FEEDING SUGAR.—"Is not brown sugar cheaper than 'coffee A,' for wax making and brood rearing?"...If pure, I prefer coffee A.

Science Applied to Farming.—XL.

Plans for Farm Experiments with Fertilizers.

"These experiments, it is true, are not easy; still they are within the power of every thinking husbandman. He who accomplishes but one, of however limited application, and takes care to report it faithfully, advances the science, and, consequently, the practice of agriculture, and acquires thereby a right to the gratitude of his fellows, and of those who come after. To make many such is beyond the power of most individuals, and cannot, therefore, be expected. The first care of all societies formed for the improvement of our science, should be to prepare the forms of such experiments, and to distribute the execution of these among their members.—ALBRECHT THAER, *Principles of Rational Agriculture.*"

I give herewith the promised plans for experiments, dividing them, for convenience, in three classes, some extremely simple, inexpensive, and easy; others more complicated and costly, but all useful.*

1.—Experiments Especially for Testing Soils.

Suppose a farmer wishes to ask his soil: "What fertilizing materials do you most need in order to bring me crops?" Or, to state it more fully: "Of the ingredients of plant-food which my crops must have, what ones can you furnish from your own stores, and what ones must I give you to make up the deficiencies in your supply?"—For this, I suggest an experiment, in which the three ingredients of plant-food most important from the agricultural point of view, viz.: Phosphoric acid, Nitrogen, and Potash will be used, each by itself; two by two, and all three together.

SET A.

Bag No.	Kind.	Amount.	Valuable Ingredients.
I.	Nitrate of Soda.....	20	lbs. Nitrogen.
II.	Dissolved Bone-Black.....	30	" Phos. Acid.
III.	Muriate of Potash.....	20	" Potash.
IV.	{ Nitrate of Soda.....15	{	{ Nitrogen.
	{ Dissolved Bone-Black.....30	{	{ Phos. Acid.
V.	{ Dissolved Bone-Black.....30	{	{ Phos. Acid.
	{ Muriate of Potash.....20	{	{ Potash.
VI.	{ Nitrate of Soda.....15	{	{ Nitrogen.
	{ Dissolved Bone-Black.....30	{	{ Phos. Acid.
	{ Muriate of Potash.....20	{	{ Potash.
VII.	Plaster.....	20	"

That is to say, on one plot a complete fertilizer would be used, contained in bag No. VI.; on another, the same, without nitrogen (bag V.); from a third, potash would be omitted; while on others, the ingredients would be applied each by itself. Nitrate of soda is chosen as the best single material, except, possibly, sulphate of ammonia which could be used also, to test the specific effect of nitrogen; and because nitrate of soda, like sulphate of ammonia, is a thing that our farmers ought to become better acquainted with. For phosphoric acid (soluble), dissolved bone-black, and for potash, the "muriate" is selected, as these are among the cheapest and best forms in which the respective ingredients can be bought.

The seven bags of Set A, for one-tenth of an acre each, will, with one other fertilizer, and two unmanured plots, suffice for an acre. For the other fertilizer, I would suggest yard-manure, unless "Extra" No. XIII., nitrogen and potash, with no phosphoric acid, can be bought. This would have been put in Set A but for the cost. Set A, with No. XIII., makes the same series as is recommended by Wolff "as a test, both of the needs of the soil, and of the light to which the yield at harvest can be raised, under existing conditions." He says:

"It is of the greatest importance to the farmer to find out which of the more important ingredients of plant-food his soil, in its actual condition, fails to supply in

*See page 129, for list of fertilizers, cost, etc. Detailed explanations of points farmers will want to know about, with directions for making the experiments, will accompany each lot sent out.—Ed.]

sufficient quantity for the production of the largest possible crops, and which, when directly added, would therefore exercise an especially favorable and profitable influence.—This can be done, practically, only by properly conducted fertilizing experiments....The trials should be made on land which is exhausted, in the agricultural sense of the word, and would, in ordinary practice, have been again dressed with stable-manure."

In addition to the regular set, it would be well to try several "extras," particularly Peruvian guano and fish, and with them, other fertilizing materials. The value of Mr. Bartholemew's experiment, described in February, was very much increased by the trials with ashes, leached and dry, and the manures produced on the farm.

The "Natural Strength" of the Soil to be Tested.

The soil is not like a cistern, which we may pump dry, and must then fill up again before it can be of use. It is rather like a pond, which may be drained very low, but whose supply is being continually renewed. This continual re-supply of plant-food is the most important feature of its "natural strength." The natural strength of most of our soils suffices only for very small crops. The crop can not rise above the level of the lowest ingredient in the food supply. The proper use of commercial fertilizers, like guano, phosphates, potash, salts, and the like, is to fill up the gaps. In a soil that has a store of available plant-food, accumulated by natural processes, or left over from previous manuring, the specific effect of the experimental fertilizers will not be so clearly marked, and we shall not be able to tell so well what we may expect from it.

2.—Experiments to Test Especially the Action of Fertilizers.

Some may wish an answer to such a question as this: "Of the different fertilizers to be had in the markets, what ones, if any, can I use to advantage, and which will be most profitable?" For this purpose, Set A entire, or Nos. I., II., III., and VII., separately, any of the extras, and other articles can be used. But where calculations in dollars and cents are wanted, the utmost care should be taken to make the experiments accurate.

I wish to call especial attention to nitrate of soda, Peruvian guano, fish, bone, and potash salts. Nitrate of soda furnishes nitrogen, about 16 per cent, in form ready for immediate use by the plant. It is excellent for a top-dressing for grass and grain, especially in spring to bring up backward winter wheat, or encourage the growth of grass on pastures, meadows, and lawns. It is used in immense quantities in Europe. A gentleman whom I happen to know as one of the best farmers in Germany, says that he considers it "a sin to try to grow oats without nitrate of soda." Sulphate of ammonia is similar in action to nitrate of soda, and less exposed to loss by leaching out of the soil, but, on the whole, I think no better, if as good, in its practical effects.

Peruvian guanos, as now sold, taking into account composition, quality, and price, are the cheapest class of fertilizers in the market. There are different grades, furnishing nitrogen, phosphoric acid, and potash, in varying proportions, and adapted to the varying wants of different soils and crops. Fish rivals guano in cheapness of nitrogen and phosphoric acid, and, when rightly prepared, is often preferable to anything else. I hope that numbers of experimenters will try Peruvian guano and fish.

Fertilizers for Special Crops.

Hundreds of farmers near cities and villages, grow potatoes, onions, and other vegetables, for market. Very often the addition of some special fertilizer, like potash salts, to the other manures used, will increase the crops wonderfully. A gentleman recently told me of a case in point from his own experience. A near neighbor and himself were raising onions last season on similar soil. Each one of them treated his crops in the same way, except that he used sulphate of potash, his neighbor did not, and he got several hundred bushels more of onions on the same area. A few dollars invested in the potash salts, increased the market value of his onion crop by \$200 or \$300. Cases like

this are very common with potatoes and other vegetables. I would recommend experiments on such crops with potash salts, either with Sulphate of Potash, (1a); "Muriate," (1); and Kainit, (1b), side by side, to test the action of each, or with the Sulphate alone. Similar experiments will often be useful on grass, grain, corn, and clover. For these the "Muriate" (1) may do as well as the Sulphate, (1a), and is cheaper. In like manner, bone, raw and superphosphated, Nos. VIII. and IX., can be tried wherever the farmer may desire.

These experiments, whose object is more to test the fertilizers than the soil, may be made on soils in better condition than would be appropriate for those of the first class for testing the soils. But it must be borne in mind that in no experiment will the first year's crop tell the whole story; that the after-effects are important; that the crops of succeeding years will have something to say, and perhaps something different. Indeed, this is true of all the experiments, and to make them complete they should be continued through a series of years and crops. At the same time, a good deal may be learned from the first season's results, and I think those who do them rightly, will be more ready for the repetitions than they were for the first trials.

Experiments for Obtaining More General Information.

The inferences from field experiments are of general value in proportion as the questions are specific, the plans appropriate, and the trials made under known and specified conditions, in varying circumstances, with different crops, and through series of years. To the large amount of useful information obtained from field experiments, a great deal more can be added. For instance, corn is one of our most important crops, and is becoming more and more so in Eastern and Southern States. But farmers, in those States, must depend largely upon artificial fertilizers for growing corn. What materials and mixtures can they best use? It is, of course, foolish to talk of prescriptions to fit all cases, but nobody knows now just what will be best for any case. The fact is, that the knowledge we have of the feeding capacities of corn, its power to obtain its food from soil and air, how different fertilizers and other circumstances affect it, knowledge of the definite sort that comes from accurate experimenting, is extremely limited. But by a series of experiments carried out in a number of places, with uniform manuring, seed, and tillage, and accurate descriptions of soil, weather, and other conditions, we might learn a good deal that would be valuable. Take, for instance, as the main question, the nitrogen supply; how much capacity corn has to get it from the soil, and how it will best be supplied in manures. We might use (1.) the fertilizers of Set A, which would give a test of the soil, and to some extent of the fertilizers also. Then (2.) to test the effects of nitrogen alone in different combinations, apply, along side of I, Nitrate of Soda, 1a, Sulphate of Ammonia, and 1b, Dried Blood. To test the action of nitrogen with other fertilizers, we could start with the mineral manures, V, (phosphoric acid, sulphuric acid lime, and potash) as a basis; and (3) try the effect of varying quantities of nitrogen by adding to these nitrate of soda, at the rate of 100 lbs., 200 lbs., and 400 lbs., per acre, on successive plots; and (4.) the effects of nitrogen in different combinations by adding sulphate of ammonia, and dried blood on others; and using Peruvian guano, and fish, each with potash salts, and finally stable-manure on still other plots. This would make, with three unmanured plots, say twenty in all, for which the fertilizers might cost as many dollars, an experiment but little more difficult or costly than farmers often make, and one that educational institutions and public-spirited individuals might unite with most valuable results. Of course similar plans could be devised for other crops, as is being done to considerable extent of late by the European Experiment Stations.

I make this proposal with the more assurance, because several professors and farm superintendents in our agricultural colleges, and public-spirited farmers, have expressed to me their desire to co-operate in such experiments. It was, indeed,

through the solicitation of one of the institutions referred to, that I was led to bestow especial thought to the subject. I should be pleased to correspond with any who may be interested to join in such an enterprise.

W. O. ATWATER,
Wesleyan University, Middletown, Conn.

Plants May Thrive on a Meat Diet.

BY PROF. ASA GRAY.

After it was ascertained that Sundews and Venus' Fly-traps digested insects as well as caught them, it was still a question if it did them any good. We ourselves see no difference between supplying combined nitrogen to the roots in the form of manure, and to the leaves of such as are capable of imbibing it, in the form of fresh animal matter. And we could never be brought to believe that such peculiar organs and peculiar actions went for nothing, or served no purpose useful to the plant itself. Such an idea would, to our thinking, border on the atheistical. But some very good people were free to express such an opinion; and some made what they called experiments or observations; from which they concluded that such plants fed with insects, or with bits of meat, or allowed to help themselves to the former, were no more vigorous than those from which every thing of this sort was excluded.

Now Mr. Darwin's son, Francis, has put this to the test by careful and decisive experiments. At the beginning of summer, he put 200 plants of common Round-leaved Sundew (*Drosera rotundifolia*) into wet moss on soup plates, divided each plate into two halves by a partition, fed the leaves of the one-half every few days with little bits of meat; left those of the other half without any, and, covering all with gauze, prevented them indulging in the capture of insects. Before long it was clear that the fed plants were profiting by their meat diet. That is, they were perceptibly more vigorous in growth and of a better color; and in time they produced more flower-stems, and larger ones, as well as more leaves. And, what is still more decisive, they bore a larger crop of seeds, and heavier seeds. The exact result as to the crop is recorded in the following table, where the numbers and weights are put into the form of percentage. The first column of figures is from the starved; the second from the fed plants:

	No Meat.	Meat Diet.
Total number of flower-stems.....	100	: 121.5
Sum of the weights of these.....	100	: 164.9
Total weight of these.....	100	: 231.9
Total number of pods produced.....	100	: 194.4
Average number of seed per pod....	100	: 122.7
Average weight per seed.....	100	: 157.3
Total calculated number of seeds produced.....	100	: 241.5
Total weight of seeds produced.....	100	: 379.7

As it is to the seed that assimilated nitrogen mainly and finally goes, being "put where it will do most good," these last figures are most significant; and the bearings of these facts upon vegetable physiology are noteworthy. Anyhow, it is clear that such plants do not catch flies for naught, or out of mere naughtiness.

Those Important Farm Experiments.

Every farmer, who possibly can, should take a hand in the important experiments announced last month, and further described now, on page 130. They may be worth hundreds of dollars hereafter to every one who tries them. The actual outlay need not be over \$7 for fertilizers, with a trifle more for freight, while a considerable proportion of this, if not the whole, or more than the whole, will be quite likely to be returned the present year, by increase of crops on the experimental acre. Let us re-state the proposal here as plainly as may be:

Naturally poor soils, and those which have been cultivated or worn, have lost one or more elements of fertility. We can not see what is missing, and an analysis of the soil will not inform us definitely. It is now pretty generally agreed that the lacking element is one, or more, of the following: POTASH,

or NITROGEN, or PHOSPHORIC ACID, or LIME, or, perhaps, SULPHURIC ACID. One soil or crop differs from another in what it lacks. Barn-yard manure supplies all the elements. So do some of the compound manufactured fertilizers; but there is seldom enough yard-manure on any farm for its necessities or its best profits.—We may buy a compound fertilizer, having equal parts (in cost) of four of the important elements; yet if only one of these is needed by the soil, we throw away \$3 out of every \$4 paid, besides the labor and cost of handling. Millions of dollars have been lost by our farmers

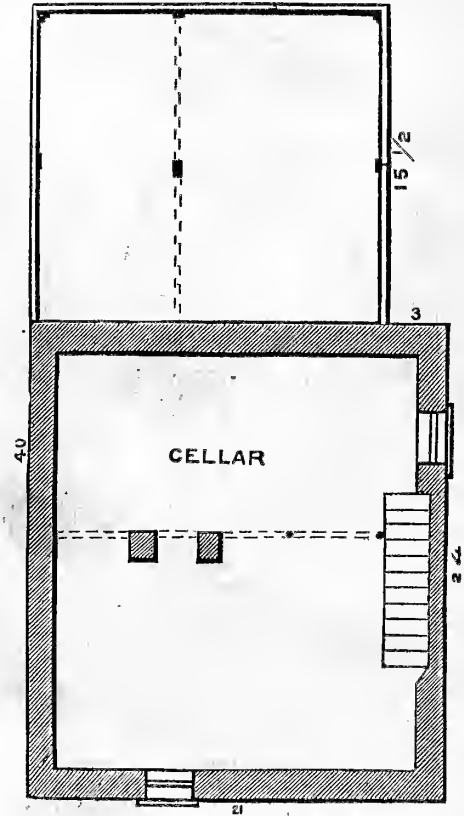


Fig. 2.—PLAN OF CELLAR.—(See page 132.)

in this way; millions more by buying and using fertilizers that, however good of their kind, did not happen to contain just the element wanted, and other millions by not getting the article paid for.

THE REMEDY.

The plan, in brief, is this: The farmer selects an acre of land as nearly as possible like the rest of his soil. This is to be laid out in ten long plots. Upon some of these plots are to be applied certain single fertilizers; on others, two of them or three of them together. Two or three plots among the others are to have no fertilizers applied. Now, across these plots are planted, or sown, strips of corn, potatoes, grain, etc., the crops most raised by the experimenter, and, therefore, most desirable to have tested.

It will at once be seen that by watching these crops where they cross the various fertilizers, we will get a direct answer as to what that soil needs for each crop put upon it. For example, if the corn on the potashed plot is just as good as on the plot having potash, phosphoric acid, and nitrogen, we shall know that it is a great waste of money to buy costly phosphates and nitrates for such a soil and such a crop. If any one or two fertilizers show a good profit in their use, as some of them doubtless will, we shall know what to use next year and thereafter on a larger scale.

The great advantages of the scheme, as proposed, are these: 1st. The fertilizers sent out are all to be tested for quality, purity, percentage of each element, etc., by Prof. ATWATER.—2d. They are to each be weighed, and sent in separate bags, ready to be used on a tenth of an acre—a plot 16 rods by 1 rod, or otherwise. 3d. The fertilizers will be supplied at a price just to cover cost of preparation, bags, etc. No one is to make anything out of it. (This Journal will make a loss in trouble, etc., but a gain in the general information

that will thus be gathered by its readers and the public.)—4th. Pamphlets prepared by Prof. ATWATER will be sent with each parcel, giving full and specific directions for making the experiments, and ascertaining the results.—Finally: as before stated, this project carries an "Agricultural Experi-

ment Station" to each farm where these experiments are tried, and supplies to the owner the information he wants, at small cost, if any—perhaps a profit. Neighboring farmers having very similar soils will also be benefited.

hall, parlor, kitchen, pantry, and to the stairs. [We suppose this room is to be warmed by a stove, having pipe entering the chimney shown in the parlor only. The arrangement for chimney for the kitchen was described last month.—Ed.] The Kitchen is commodious and pleasant; has three windows, an outside rear entrance, and adjoins the dining-room, pantry, and bed-room. The Pantry is sufficiently large and convenient to answer the requirements of both dining-room and kitchen. It has a small window, and is thoroughly shelved. The Bed-room opens directly from the kitchen. Its purpose in the partial erection (as shown last month) may be changed in the completed building here described, by making it an auxiliary of the kitchen for the coarser work; or, if needed, it may still be used as a bed-room for help....**Second Story,** (fig. 4).—Height of ceiling, 7 feet. There is a hall, two chambers, two bed-rooms, and two closets in this story, and no waste room. The Hall is just large enough for convenience. The Chambers are of ample dimensions, with a chimney between them, admitting the use of stoves when required....**Construction.**—The Foundation for the main house is of broken stone, and mortar, showing 3 feet above ground, neatly pointed where exposed to sight. The Wing is supported on piers, as described last month. Girders, (shown on the cellar plan by dotted lines), supported on strong posts, carry the central portions of the building. The shortness of the spans between bearings, allows very light floor beams. It is, however, important that the beams should be bridged to secure uniformity of strength, and prevent vibrations. The Frame is constructed in the usual manner—all the ties, girts, and headers, being "framed in." The inclosing is sufficiently indicated in the estimate. The front

quarter circle, and winders at the top. These winders extend beyond the hall into the ceiling of the dining-room, (as sketched), but do not interfere

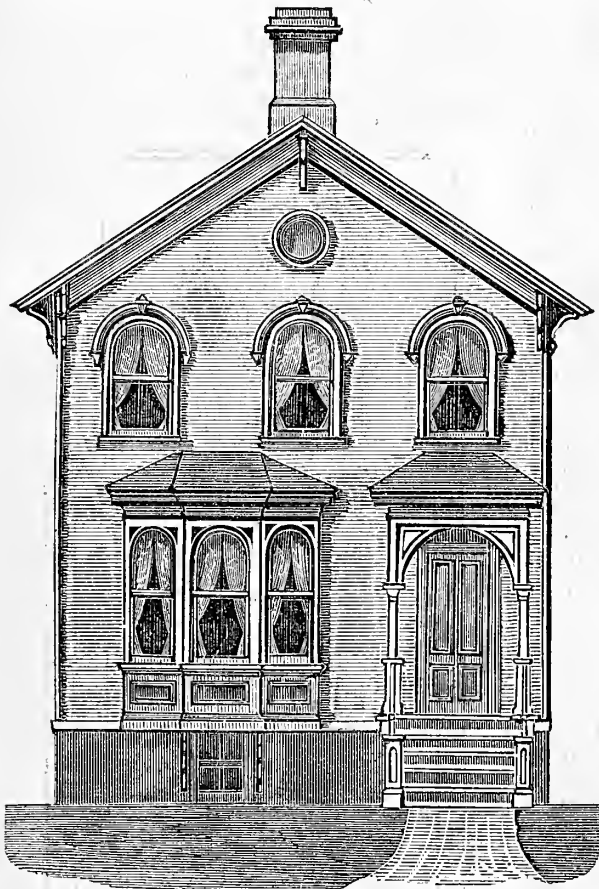


Fig. 1.—FRONT ELEVATION.

ment Station" to each farm where these experiments are tried, and supplies to the owner the information he wants, at small cost, if any—perhaps a profit. Neighboring farmers having very similar soils will also be benefited.

A Cottage, Costing \$800 to \$1,050.

BY R. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This design is an enlargement of the small cottage described on page 92 (last month), and the two plans and their descriptions should be read together, to best understand them. The arrangements are very complete in convenience, appearance, and economy....**Exterior,** (fig. 1).—The outlines and style are simple. The front is enlivened by the Porch, Bay-Window, and other projections. The details of finish are of neat design, and in harmony, giving an agreeable expression of taste and refinement—features especially pleasing in cottage architecture....**Cellar,** (fig. 2, placed for convenience on page 131).—Height in clear, 6½ feet. It is under the main building only; has two windows, and stairs leading to the first story. It contains 378 feet area, giving abundant room for all ordinary requirements....**First Story,** (fig. 3).—Height of ceiling, 9 feet. The best use is made of the space, by having but few divisions, leaving the rooms of good size. The Hall is small, but is conveniently arranged to answer all necessary purposes. It is entered from the front porch, and communicates directly with the parlor and dining-room, and by the main stairs with the second story. There is sufficient room for a hat-rack at the right of the front door. The Parlor is of fair size, and the large bay-window adds materially to its area and cheerfulness. With very little expense in furniture, this apartment may be made pleasant and cosy. The Dining-Living-Room extends the whole width of the house, with a window at each end. It is conveniently arranged, with doors opening from the

windows have semi-circular heads outside. In their construction the frames and sash are square, to admit ordinary curtain fixtures on the inside. The circular head is outside of, and "planted" on the flat casing, or "blind strip," and is made perfectly tight by a flange of tin. The additional expense of such circular finish is but trifling, compared with its good appearance. The side and rear windows have square heads, with rebated drips. Blinds are intended for all windows above the cellar. Ventilators are placed in each gable. The Porch has boxed pedestals, and columns, scroll-sawed ballusters, and circular spandrells. The inside walls and

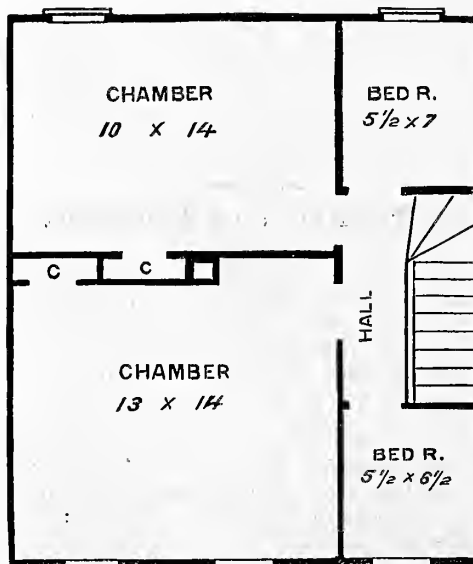


Fig. 4.—PLAN OF SECOND FLOOR.

ceilings are "sand-finished" on two coats of brown mortar. The main stairs are constructed with a

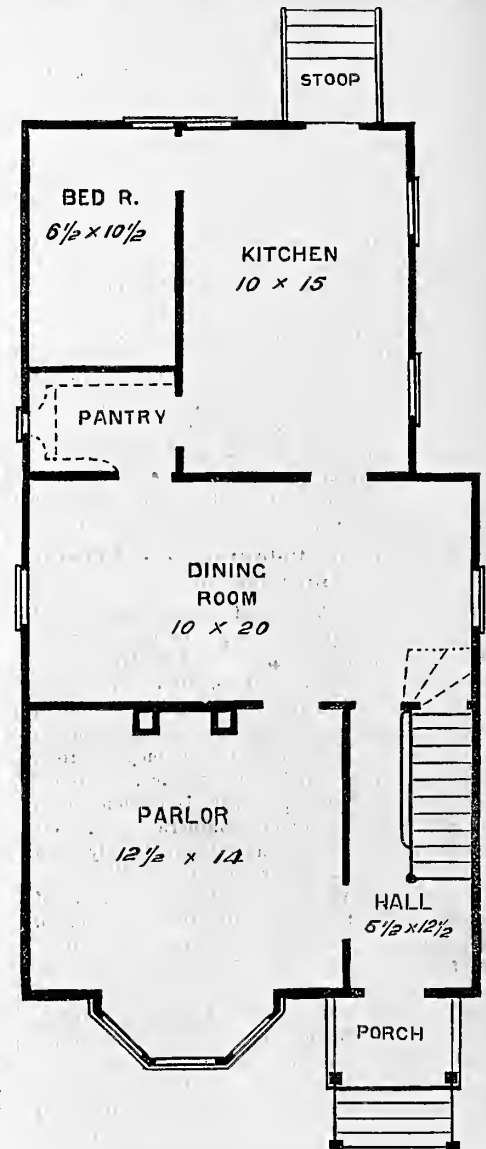


Fig. 3.—PLAN OF FIRST FLOOR.

with its use, or seriously injure its appearance. The Bay-Window is neatly arched on the inside. Marble mantels are put in the parlor and dining-room, and shelves in the chambers. The second story hall is lighted through the door (sash) of the front bed-room....**Suggestions.**—This plan was arranged to suit a village lot 25 feet in width, leaving a passage-way at the side. This necessitated placing the wing at the rear of the main house. If there is more ground, the wing may be placed at the right of the main part, facing the road. The communications between the dining-room and wing, would still be similar to those shown. The window at the right of the dining-room would be placed in the rear. These changes entail no extra expense, if determined on before commencing to build.

Estimate, cost of materials and labor for main house:

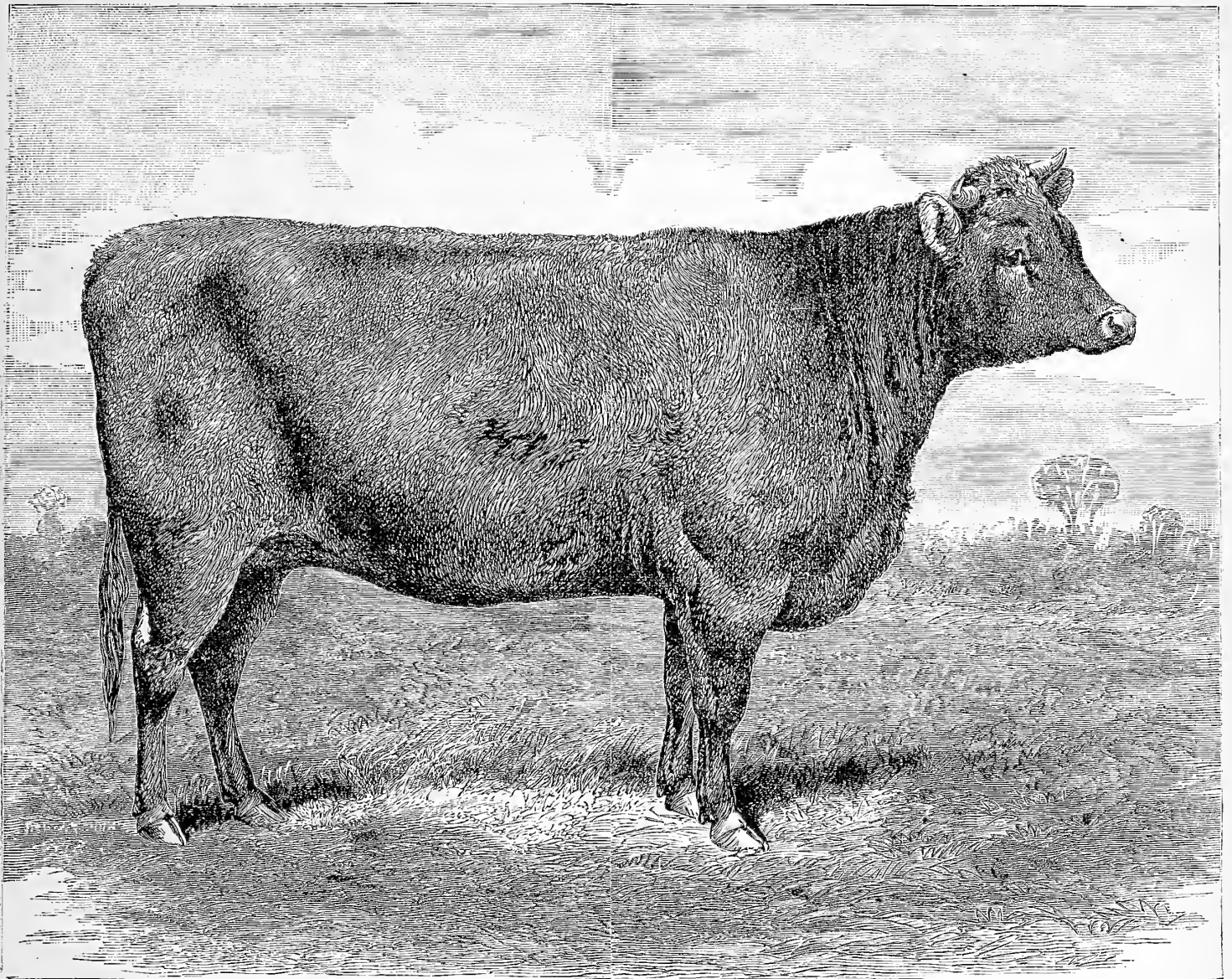
56 yards excavation, at 20 cents per yard.....	\$ 11.20
875 feet stone foundation, at 5 cents per foot.....	43.75
2000 brick, (furnished and laid), at \$12 per 1,000.....	24.00
340 yards plastering, (complete), at 25 cents per yard.....	85.00
1236 feet of timber, at \$15 per M.....	16.89
2 sills, 4x6 in. 24 feet long.....	27.50
2 sills, 4x6 in. 21 feet long.....	32.40
2 ties, 4x6 in. 24 feet long.....	18.00
4 ties, 4x6 in. 21 feet long.....	6.75
250 wall strips, at 11c. each.....	1.60
162 siding, (9 inch), at 20c. each.....	30.00
Cornice materials.....	28.00
135 shingling lath, at 5c. each.....	6.75
24 bunches shingles, at \$1.25 per bunch.....	30.00
112 flooring, (9 in.), at 25c.....	28.00
2 cellar windows, (complete), at \$4.....	8.00
1 bay window, (complete), at \$40.....	40.00
5 plan windows, (complete), at \$12.....	60.00
Stairs, (complete), \$10; 12 doors, (complete), \$90.....	136.00
Mantels, \$39.91; Porch, \$30; Closets, \$10.....	79.91
Nails, \$3; painting, \$50; Carving, \$12.....	71.00
Carpenter's labor, (not included above).....	80.00
Total cost of main house.....	\$300.00
Add last month's estimate for wing.....	250.00
Total for whole complete.....	\$1,050.00

The Duchess of Hillhurst 3rd.

Another notable Duchess has made her mark in the world; and it is one of American lineage and birth. This is Duchess of Hillhurst 3rd, a Shorthorn heifer owned by Mr. Loder, of England, but bred by Mr. Cochrane, of Hillhurst, Canada, and

—a rich red—the outline is a tracing of the original, and represents the form of the heifer with exactness. The sire of the heifer is Duke of Hillhurst 2nd, a descendant of the Hillhurst herd, owned by Mr. Cochrane of Canada. The branch of the Duchess family, to which this animal belongs, is much more vigorous and productive than the pure Duchesses, and is, in fact, the only offshoot of the family

horses, to be kept on hand even in times of peace, and in war the consumption is very great. Every few years, European journals are alarmed at the scarcity of horses, and just now the English people are anxiously asking where a supply could be procured for their cavalry, in case of war. In this event there would certainly be a demand for our animals, larger than we could supply, and in any



SHORTHORN HEIFER, DUCHESS OF HILLHURST 3RD.—Drawn and Engraved for the American Agriculturist.

purchased by her present owner at a recent sale of imported stock in England, for 4,100 guineas, or \$21,525—a remarkable price for so young an animal, scarcely more than a calf. It is possible that she, as an article of merchandise, is worth all she brought. Breeding animals are not to be justly valued by the price of beef or of milk, and if one of her progeny should turn out to be as valuable a breeder as one of her related race, the Duke of Airdrie, which has the deserved reputation of being the parent of more valuable animals than any other bull, and by far the best Shorthorn bull ever seen in America, the price may well be considered as moderate, even in these depressed times. This animal has been universally accepted as a model Shorthorn, and certainly no one can refuse to admit, at first sight, that she possesses, in perfection, all the beauties of this fine race. Her form and features are perfect, and are admirably represented in the colored print from which the engraving was made. This print is given in an extra sheet by the "London Agricultural Gazette," a journal which has done good service to the Shorthorn interest, in steadily opposing the delusive style of picturing animals, which has, unfortunately, become so popular, both in this country and in England. While our engraving can not give the color of the animal

which continues to increase in number. Unfortunately this Airdrie branch has been almost entirely lopped off from this side of the Atlantic, so that but one pure descendant of this important family, and that as yet unproductive, remains in America.

The Exportation of Horses.

Several hundred head of horses were sent to Europe last year, and recently a number were shipped through the agency of Mr. Stoddard, of 626 Greenwich St., New York. This, we believe, is the first shipment from New York, and is the beginning of an important business which must grow to large proportions in the course of time. We have a class of horses that are admirably fitted for cavalry purposes, and for road uses. For this we have to thank the breeders of trotting horses, who have, during many years of careful improvement and training, supplied the country with a most useful class of animals. The racing horses of Europe can not compete with our trotters, either for the road or for the purposes of war, and now that the value of our horses has been discovered, we look for a permanent market for them in Europe. The frequent European wars call for a large supply of

case it is probable that all of our surplus stock will find ready and profitable sale in foreign countries.

In view of these circumstances, it would be well for us to consider how we can improve our stock, so that farmers may be able to take a share of this business. It has been too frequently the case that farmers have not only begrudged the cost of the services of a good sire, but they have also reserved for breeding only the poorest of their mares, lest the better ones might be forced to lose a few weeks work in the spring. Spavined, wind-broken, worn-out mares, have been used for breeding, until a vast number of horses are constitutionally prone to disease, and are of little value from their birth. It costs no more to raise a good colt than a poor one, and if farmers would keep a good brood mare or two, and would secure good sires, a mare might be made as profitable in her increase as two good dairy cows, without considering the value of her work, which, at the least, will pay for her feed. It is an established fact, although it may seem at first sight to be an anomalous one, that the more we substitute railroads and steam-engines for horse-power, the greater demand we create for the services of horses. Horse-power is, after all, only a feeder for steam-power, and the more steam-power we use, the more horse-power we shall need to supply it.

Among the Farmers.—No. 27.

BY ONE OF THEM.

Corn and Cob Meal.

Well do I remember, as a youngster of nine to eleven, how I delighted to be perched upon Old Gray, between and upon sundry bags of corn and rye, or wheat, and started off for the mill. I could fish until the grist was ground, and no boy ever had, in his own view, a choicer lot of lines and hooks. The country mill of to-day is much like that of my boyhood; the miller is just as chatty, and just as dusty, and the farmers just as stupidly bring their corn on the ear. I had supposed that the custom was dying out; but no—hundreds of thousands of bushels are ground every year, and are likely to be. I asked the miller, "How is it that you grind corn on the ear? Do the farmers really think the cob is worth anything as feed?"—"No," said he, "they know it is not. I grind thousands of bushels, because they bring it here, but they never *buy* any, if there is any other feed they can buy."—"What is their notion?"—"They know that there is not as much good in a hundred bushels of cobs as in a pint of meal, and they have the cobs ground from sheer laziness."—That reason never occurred to me before. We use no power shellers in this part of the country, and it is no small job to shell by hand. The fact that the cattle and horses eat the cob meal, is patent; that it *does* them no good, is not so clear. Indolence catches at the idea that they would not eat it were there not some good in it, and so, as it is much easier, and as it has been customary to grind cob and corn together, the mills are made to do it, and the millers really forced, against their own good sense, and against their will, to grind them. I have no doubt it is true that corn and cob-meal fed pure—that is, simply "wet up,"—is less likely to do harm than pure Indian meal; but fed as it ought to be, it is certainly less likely to do good—which is more important. I think Indian meal never ought to be fed to cows, or any ruminants, unless in the form of a thin gruel, which farmers call "slops," or upon cut hay, straw, or chaff. Now rye straw is somewhat nutritious, and really of some benefit to the beasts, whereas the digestion of corn-cobs, which the animals are forced to go through with, is a tax upon their systems that results only in harm, except in so far as the mechanical distension of the stomach offers a similar advantage to that secured by feeding meal upon straw or hay. I saw at the mill a very

Light and Handy Bag-Holder.

It was made of a crooked branch, **U** shaped, into which three or four sharp hooks were driven on the inner side, to hold the top of the bag; the whole being supported upon three straight light legs. Almost any old orchard will furnish branches out of which similar pieces of wood might be cut and shaped. Such things are very handy, now and then, and upon large farms it is well enough to have a plenty of them, but on such a farm as mine they are in the way. I have "tinkered up" many a handy contrivance, which never was used half a dozen times, and which, for years, was either under foot, or taking up valuable space somewhere, until it was made into kindling-wood. Two little hooks, set in one side of the fanning mill, to hang the edge of the bag on, is the most convenient bag-holder for people who need one so little as we do.

Stealing Poultry—Marking.

Nothing is more exasperating than the loss by theft of one's choice poultry. We are not particularly liable to have pigs and sheep stolen, and it is still more rare to hear of a young "beef critter" being found missing from some mountain pasture. I can sympathize with those farmers of the South, who have not only poultry, but pigs, no matter how choice, made off with, and do not blame them for making no more efforts to introduce choice stock, especially when the well-bred stock are more easily caught than others. This is certainly true of some kinds of poultry. All the Asiatics, Dorkings, Plymouth Rocks, and the French fowls, are more easily caught than other breeds. Hamburgs, Leg-

horns, Games, and some other kinds, are seary and noisy—thus they alarm the dog and the owner.

A friend of mine, on Long Island, has had his choicest Brahmas twice selected out carefully by thieves, breaking up his breeding pens, and putting him, of course, to heavy loss and much perplexity. It is very difficult to trace such a theft, for only the owner knows his own birds, and they can not be described so that another person can readily recognize them—unless, indeed, by some cutting of the web of the toes, they may be marked. I suggested to him dyeing the fowls of each breeding pen. Some of the brilliant aniline colors, pinks, and purples, might be used, and no one would dare to take such fowls. They would not only be marked birds, but each single feather would be a tell-tale, whether dropped along the highway, or found anywhere else, on or off the fowl. So obvious would be the danger, that no thief would be bold enough to take the risk. These dyes are perfectly innocent, easily applied, and can not be removed until the fowls moult.

Blood and Breeding.

Changes in form in domestic animals are brought about with more or less rapidity through circumstances under the control of the breeder. Structure, established by generations of careful breeding, with certain objects in view, is characteristic of any fixed breed or type of animals. The moment the surroundings change, and the system of breeding, (that is, selection of breeding animals), which has formed or maintained certain structural peculiarities, is given up, the progeny change back (revert) or take on changes adapted to their new conditions of life. An interesting, though by no means unusual or surprising fact, has lately been brought to my notice, showing how rapidly this return to the feral, or wild condition, changes structure. A gentleman of this vicinity sent to Virginia a pair of carefully bred Berkshires, with remarkably short faces, and otherwise of approved shapes—broad and level, with well developed hams and shoulders; low set, with small offal, fine-haired, etc. The progeny of this excellent pair have since been bred together, a portion of them being kept confined, the others allowed to run at large in the woods, and take their chances with the "Razor-backs" to the "manner born." The result is, that those bred in confinement, and, so to speak, *luxury*, have still short faces, and other characteristics of well-bred Berkshires; while the others of the later generations, though just as pure as to blood, have changed greatly; fallen off in size somewhat, have straighter and longer snouts, are getting slab-sided, and gradually approximating the half-wild type.

Another fact seems to be proved, which rather surprised me, and yet should not. It is, that even these partly reverted Berkshires do not hold their own in the woods with the natives. That they are not so prolific, and do not make so much pork, and even the pork is not superior, unless the pigs are taken up and fed a little while before killing.

The delicacy of Virginia mast-fed hams is well known; their excellence arises from two or three distinct causes. One of these is the health of the pigs; another is the fact that, during much of the year, it is, "root, hog, or die!" and then, when the woods are full of chestnuts, chinquapins, acorns, and other mast, they pick up a living very easily, and fatten up a little—enough to make their flesh juicy and tender before killing time; and another cause, undoubtedly, is that this food is sweet, wholesome, and both it and they far removed from their ordure. If it be really true that for this wild life, the native hog is the most economical producer of pork, and that the pork is of the best quality, it is time that we knew it, and it would pay somebody to undertake the demonstration.

Pigs in the California Drouth.

An old friend, for some years a resident of Santa Barbara Co., Cal., writes me, that before the close of the terrible drouth, which for more than a year afflicted that region, most of his pigs had succumbed, the few which survived were valued, of course, for the particular quality of being able to live on "faith and a promise," without much, if any, more substantial provender. My friend wishes

to know which breed of swine will thrive best on this diet. What kind of pigs live on the least food, and on coarse food. I believe that, as a rule, the wild, or half-wild pigs can bear hunger best, yet when they get a chance, they eat voraciously, but do not fatten. The most improved breeds, the small Yorkshires, for instance, live on the least amount of food, and if they get a surplus—that is, more than enough to sustain life—they lay it up against a hungry day, in the form of fat, so that, other things being equal, it seems clear that such pigs will prove the most economical where long drouths are to be guarded against. The small Yorkshires, and the best strains of Essex pigs, are *always* fat with the commonest feeding and care; hence, always prepared for a drouth. I do not believe the "Landpikes" would stand starvation commons half so long, and am sure that the half-bred, or half improved cross-bred breeds, like Chester-Whites, Durocs, Poland-Chinas, would not, for they require more food, and are neither accustomed to occasional protracted abstinence, nor will they keep fat upon ordinary non-fattening food.

Irish Butter.

Our village doctor was for many years a surgeon in the navy, and he tells me that all navy men, and officers of the merchant service also, who have occasion to lay in stores for use in hot latitudes, select Irish butter, and that this, bought with only the ordinary judgment of the mess eater, will keep sweet and flavorful around the world. The best butter they can buy in the Philadelphia market, will keep but a little while at sea, while the dollar-a-pound butter of the famous Jersey dairies, will hardly keep sweet ten days in warm weather. We have enough Irish dairymaids in this country to test the matter pretty thoroughly, and find out if it is in the making, in the grass, or in the kine. The cream of different breeds of cows makes butter, which varies in keeping quality, as much as it does in color—and I am by no means sure that the paler kinds of butter do not uniformly prove of the best keeping qualities. There is, in my mind, a great distinction between pale butter and butter which has lost its color. The cream of a pure Jersey, or even Guernsey, herd, may be "whipped to death" in the churning, and the butter "come" colorless and sickly-looking—whereas the same cream, properly churned, might produce beautiful yellow butter. The pale tint is certainly not the natural color of the butter. The best keeping butter in the New York market, has more or less color, according to the time of the year, but it has a fair color, and is never, perhaps, very pale. I would not say that the paler butter is, the longer it is likely to keep, but I think that the highest colored butter, whether the color be natural or artificial, is not nearly so likely to keep as well as the paler kinds. No doubt salt has much to do with the keeping of butter, and our dairy people can not be too careful in this respect. It is perhaps a question whether the purest salt is the best. Certainly an ounce of saltpeter to the pound of salt, ground together, and used just as pure salt would be, not only has no bad effect, but undoubtedly imparts a keeping quality superior to pure salt, [which we do not admit.—Ed.] Sugar is a well known and powerful antiseptic, and has been used for keeping butter with good effect, the quantity being not sufficient to impart perceptible flavor, say one or two ounces to the pound of salt. I find that packers of summer butter, which is intended for winter use, put about one ounce of salt to the pound of butter. We never salt so heavily in making for our own use, as we do not enjoy butter made with more than half the above named quantity. Last summer we employed

An Irish Dairymaid,

at least a young woman newly-arrived, who had been bred to the work of the cow-byre and dairy. She made excellent butter, following the usual course, except that she worked the butter *only once*, first working out the buttermilk, washing a little, and then working in what she called *dissolved salt*—that is, fine salt mingled with water, which of course dissolved a good part of it. This salt and brine was, to a great extent, taken up by the butter, and the water, subsequently, but during the

same operation, worked out. We usually work out the buttermilk, salt, and after eight to twelve hours, work again, and thoroughly. Her butter was excellent, and kept well—rather better, perhaps, than if it had been worked twice in the usual way; for there is such danger of breaking the butter globules, that it is better to err on the side of hardly working enough, than to work it too much. It takes considerable hard work to make the butter appear greasy, from the broken butter globules; yet, doubtless, a few globules break very easily in the operation. We all know that greasy butter will not stay sweet; hence, the problem is, to remove the buttermilk, with the least possible working.

It is only a few days ago, that a gentleman who used to live at Antigua, in the West Indies, was at my desk, on some business, and stated that the best butter ever received in those hot ports was Irish butter; that it was never, in his experience, other than sweet, and excellent, and that after a firkin was opened, it kept until it was consumed.

Talks on Farm Crops.—No. 14.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

I anticipate great things from Prof. Atwater's Farm Experiments. That was a grand idea, putting up small packages of different manures of known composition, and letting farmers try them on different soils and on different crops. I hope the good work will be continued, with such changes as experience shall show to be necessary. And I hope in all cases one or two plots will be left without manure of any kind. [Of course the writer did not know of our plan for Experiment Stations all over the country, given last month on p. 86.—ED.]

Indian corn has long been, to me, one of the mysteries of our agriculture. It is a grand crop. In chemical composition, Indian corn and wheat closely resemble each other. And yet, on a great variety of soils, without manure, one acre of Indian corn will yield double the amount of produce as an adjoining acre sown with wheat. In other words, it is as easy to grow 30 bushels of shelled corn per acre, as 15 bushels of wheat per acre.

I think the rule would hold good on a great many farms in this section. It is due probably in some degree to the fact that Indian corn grows later in the season, and during very hot weather. It takes up from the soil, and evaporates through its leaves, an immense amount of water, and consequently is able to take up a much larger quantity of nitrogen from the soil. If land, in good condition for wheat, with season favorable, produces 15 bushels of wheat per acre, I think the reason it does not produce 20 or 25 or 30 bushels, is due to a lack of available nitrogen in the soil, and possibly to a deficiency of available phosphoric acid. There is enough of it in the soil, but the wheat is not able to take it up—while the corn is.

"A bushel of corn and stalks," said the Doctor, "contains about 4-lb. of phosphoric acid, and a bushel of wheat and straw about the same amount. And we shall not be far wrong in assuming that a bushel of wheat and straw contains 1½ lb. of nitrogen, and a bushel of corn and stover about the same. Why a given piece of land that will only grow, without manure, 15 bushels of wheat, will grow 30 bushels of corn, is a question that, at present, can not be answered. You need more experiments, and Prof. Atwater is entitled to great credit for what he is doing in this direction."

"All of which," said the Deacon, ironically, "is wonderfully interesting. Assume, for the time being, that the reason is because the corn, growing in warmer weather, and perspiring freely, can drink a much larger quantity of water. If it sucks up twice the water from the soil, it would get twice the amount of phosphoric acid, nitrogen, and potash. This is easy enough to understand, and you may as well take it for granted and go on with your story."

"Very well," said I, "then it follows that (1) if corn and wheat brought the same price, corn would be a much more profitable crop for the 'chemical

farmer,' than wheat. The wheat might leave more than half the 'chemicals' in the ground, while corn might take up two-thirds or more of them. (2). It follows, too, that land may be much more rapidly and completely impoverished by growing corn, than by growing wheat, but (3), on the other hand, if the crop is fed out on the farm, corn can be used to great advantage in developing and increasing the fertility of the farm. It will gather up the nitrogen, phosphoric acid, potash, etc., from very weak solutions in the land, and when the crop is fed to animals, from 80 to 95 per cent of the valuable ingredients of plant-food will be left in the manure, and the manure can be used for growing crops which need a larger supply of plant-food in the soil, and which command a higher price."

"That is not a bad idea," said the Doctor. "You can grow corn, and, by feeding it out on the farm, make your land rich enough to grow good crops of wheat, potatoes, barley, etc. All these crops, in proportion to the nitrogen, phosphoric acid, and potash that they contain, usually bring a higher price than corn."—"In some parts of the West," said the Deacon, "one bushel of wheat will buy four bushels of corn, and even here one bushel of wheat will buy 2½ bushels of corn."

"And yet," said I, "a bushel of wheat takes no more plant-food out of the soil than a bushel of corn. Corn and clover can be grown cheaply on good land, simply because they can live and thrive on soil that does not contain sufficient available plant-food for profitable crops of wheat, barley, etc."

"The experiments published in the *American Agriculturist* for February," said the Doctor, "possess unusual interest. On Mr. Birdsey's farm, three of the plots dressed with nitrogen and phosphoric acid, produced 20 bushels of shelled corn per acre. On two other plots, where potash was used alone, and with nitrogen and phosphoric acid, the yield in both cases was 48 bushels per acre. It seems clear that the soil was deficient in potash. It contained enough available nitrogen and phosphoric acid to produce 48 bushels of shelled corn per acre, and it produced only 20 bushels simply from lack of potash. When this was supplied, the yield rose up to 48 bushels per acre."

"But this is not by any means a maximum crop," said the Deacon, "and it is curious that some of the plots dressed with nitrogen, phosphoric acid, and potash, did not give a larger yield."

"The reason," said I, "seems to be this. The soil was really deficient in available potash. It takes nearly 2 lbs. of potash to produce one bushel of corn and stalks, cobs, etc. On Plot No. 5, 53½ lbs. of potash, 17 lbs. phosphoric acid, and 10½ lbs. of nitrogen, were sown per acre. This dressing increased the crop 28 bushels per acre. It would probably have been more if more potash had been applied. The nitrogen and phosphoric acid could do no good, because there was not enough potash to produce a larger crop. On Plot 3, 160 lbs. of potash alone was applied per acre, and the yield was no larger than where 53½ lbs. were sown. There was nitrogen and phosphoric acid enough for only 48 bushels per acre, and the excess of potash could not raise it above this point."

"This experiment," said the Doctor, "shows that while there are occasionally soils which, owing to peculiar treatment, such as the use of bone-dust, fish manure, dried blood, etc., are relatively poor in potash, and rich in nitrogen and phosphoric acid, yet, even in this case, a large and profitable crop of corn can not be grown by the use of potash alone. We need nitrogen and phosphoric acid, in addition to the potash, to produce a maximum crop. The climate or season was probably capable of producing 70, 75, or 80 bushels of corn per acre, and the reason why Plot No. 3 produced only 48 bushels was, probably, due to a lack of nitrogen and phosphoric acid."

"In Mr. Bartholomew's experiments," continued the Doctor, "phosphoric acid seems to have been the weak link in the chain. The 'No Manure' Plot produced about 16 bushels of corn per acre; plaster alone increased the yield to over 19 bushels per acre. Plaster and 17 lbs. phosphoric acid, increased the crop to over 33 bushels per acre; plaster and 25½ lbs. of phosphoric acid increased the yield to nearly 38 bushels per acre; while plaster

and 51 lbs. of phosphoric acid increased the yield to over 41 bushels per acre. The reason none of the plots did not yield over 41 bushels per acre, is probably due to a deficiency of nitrogen in the soil. In this case, therefore, as in the other, the evidence all tends to show that if we want a good, profitable crop of corn, we must in some way furnish a liberal supply of nitrogen and phosphoric acid. Hen manure and plaster gave a yield of 56½ bushels shelled corn per acre."—"Good," said the Deacon, "I always told you that hen-dung and plaster would beat your artificial manures."

"It is a capital manure," said I, "but you can raise just as large crops of corn with artificials as with hen manure. What we want is a good supply of nitrogen and phosphoric acid."

And now, how are we going to get nitrogen and phosphoric acid? It seems clear to my mind that we can not afford to pay 20 cents a lb. for nitrogen to raise corn at 25 to 50 cents a bushel. Where we can get 75 cents a bushel, and can make good use of the "stover," it may pay well to use artificial manures for corn, but even in this case I am inclined to think it will be better to use the artificial manures on some other crop, and plant corn afterwards to gather up the nitrogen, phosphoric acid, and potash that they leave in the soil.

We can not be too often reminded that it costs just as much to plow, harrow, roll, mark-out, plant, cultivate, hoe, and cut up an acre of corn that produces only 16 bushels, as one that produces 70 bushels. What we want to ascertain is, how to produce good crops. It is all very well to tell us that a few pounds of phosphoric acid will increase the yield of corn from 16 to 41 bushels per acre, and that at 70 cents a bushel the application of this manure affords a profit of \$12 per acre. This is true. But we might better say "if we use the superphosphate, the loss of growing corn on such land will not be as much by \$12 per acre as if we planted the field without manure."

We must first ascertain how many bushels per acre it requires to pay expenses, interest on land, etc., and then, if we know how much it costs to increase the yield over and above that amount, we can tell whether we are making or losing.

As far as possible, we should aim to raise corn on land naturally rich enough to produce a fair crop without manure. If we have a piece of low, rough land, that needs nothing but draining and cultivation to make it rich, there is the place for corn. Drain this land and get a big crop of corn from it, and use the corn and stover to feed out and make manure for the poorer, upland portions of the farm.

On good, clean, highly cultivated land, where we can use the reaper and mower, it is not clear to my mind that corn can be grown to advantage except as a "fallow crop." If we want to clean the land, or if it contains a quantity of plant-food that wheat or barley, or potatoes, or hay, can not utilize, we may plant corn with great profit. But we should rarely plant corn on land that is capable of producing good wheat, barley, potatoes, roots, and hay, and where these crops can be sown and harvested to advantage, unless it is for the purpose of cleaning the land, or for utilizing the plant-food which the higher priced crops leave in the soil. I feel certain, at any rate, that it will be rarely good management to raise corn on such land, and sell it at ordinary prices. We can afford to raise clover on our farms, but it is seldom, indeed, that we can afford to sell it. We had better sell timothy hay. It takes less from the soil, and brings a higher price. So it is with wheat, and barley, and potatoes. Corn and clover are grand crops, but unless you have new, rich, cheap land, you can not afford, at ordinary prices, to raise them to sell.

GAIN OF WEIGHT IN GOOD STOCK.—It is one of the advantages of keeping good stock, that not only is more flesh gained for the quantity of food consumed, and a better quality of flesh produced, but the waste in the shape of offal is greatly reduced. The Shorthorn heifer "Miriam," bred by Mr. J. Stratton, which was awarded first-prize for the best female at the Butcher's show at Islington, England, last year, weighed alive 1,868 lbs. The

dressed weight was 1,346 lbs., giving over 72 lbs. dressed to the 100 lbs. live weight. Perhaps there is no other animal than a very good Shorthorn, that would dress so well, and an instance so well authenticated as this, shows the value not only of the breed, but of good feeding as well.

A Cheap Poultry House.

Mr. "W. A. B.," Caroline Co., Md., sends the following description of his poultry house, suitable for those who need a cheap building, and can do the greater part of the work themselves. The plan is given in figure 1. The center building is 10 x 10 feet, and is 6 ft. to the eaves. The wings are each

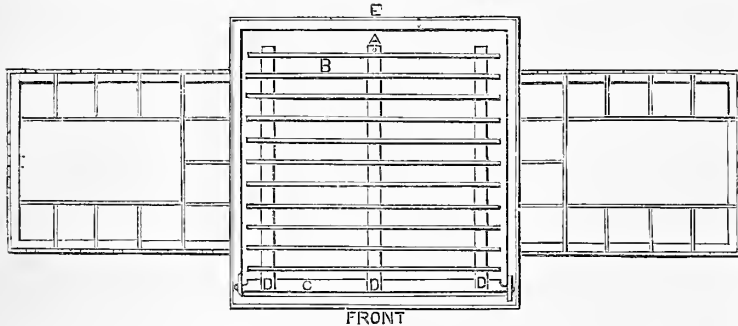


Fig. 1.—GROUND PLAN OF POULTRY HOUSE.

8 x 6 x 4 feet. Either of the three parts may be built first, and the others may be added from time to time. No posts are used in building it. The sills, 3 x 4 in., and 10 ft. long, are mortised and put together in place; the plates, 3 x 3 in., and 10 feet long, are put on the sills; then eight boards are cut six feet long, four of them with the angle at the top to correspond with the pitch of the roof. These are nailed to the sills, and those in front and back nailed to the edges of those on the ends. Then four sticks are cut each five feet six inches long,

coops on each side, in each wing, twenty in all, (18 x 18 x 20 inches). These are closed inside with slats, and each one is independent, and entered from the outside, as shown in figures 2 and 4. The entrances to the nests are in the doors, as in figure 2. Figure 4 is an inside view of one of the wings, showing the interior arrangement of one side. The two windows in front, one in each wing, three doors, and twenty-three entrances for the fowls, will give sufficient ventilation, but if more is needed, small doors or windows, 18x18 in., can be put above the plates, in the ends of the center building. The cupola is not necessary, but it allows the foul air to escape; it costs about a day's work for a handy man, and is built of scraps. The cost is for 875 ft. of lumber, \$14; shingles, laths, and strips, \$16.75; nails, hinges, glass, screws, and putty, \$3.75. Total, \$34.50, for materials. The roof need not, of necessity, be shingled, but it will be found the cheapest in the end, and at the same time it looks better.

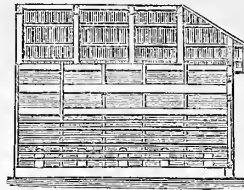


Fig. 4.—SECTION.

Goat Keeping for Profit.

The number of goats kept in the United States is rapidly increasing. Large flocks exist in parts of California and Texas, and many persons are turning their attention to the keeping of these animals as a profitable occupation. In some localities, goats are kept for their milk, and for this purpose they may be doubtless made still more widely useful. But goats can not be kept in large flocks for milking, nor is the flesh at present marketable. The profit from the goat can come only from the skin and the hair. A large quantity of goat skins is yearly imported for tanning, to produce morocco leather, and

the hair of the common goat is valued for the plasterer's use. The Angora goat bears a fleece of "mohair" that is valuable for several different manufactures, and the Cashmere goat has an undergrowth of fine wool, from which the most costly shawls are made. By crossing with the Angora males, the common goat can soon be bred up to a point where the fleece is worth as much as that of the pure bred, and it is evident that if the largest profit is desired, the best animals should be kept. The goat will thrive where the poorest sheep would starve, and it better enjoys the rough fare of rough places than the sweetest pastures of grass.

There are many rocky and half-barren localities that might be put to good use by being turned into goat pastures, and there are many better pastures, ill-fitted for the less hardy sheep, upon which goats could be successfully kept. While much harder than sheep, and less subject to destruction by dogs and wolves, goats have yet some diseases of their own to contend with. Of these, foot-rot is the worst, and diarrhoea and dysentery are sometimes troublesome. Of parasites, the house is the only one that is seriously injurious, and this is not at all difficult to deal with. Foot-rot, and the other ailments of this animal, are to be prevented, or treated, precisely as those of the sheep; and precautions to

avoid damp and close confinement during the kidding season, are necessary. In general, the management of a flock of goats differs in no material respect from that of a flock of sheep, the rules for feeding, breeding, etc., of the one, apply equally to the other.

Scoops for Sowing.

In sowing fertilizers or plaster, it is disagreeable to use the hands. A convenient implement for this purpose may be made of a piece of tin plate (a fruit can, which has served its first use, will furnish the material), cut in the shape shown at figure 1. This is then bent around a circular piece of board, and nailed with a few tacks or shingle nails. A handle is then inserted as shown at figure 2, and the scoop is complete. Various sizes may be made, one that will hold a quarter of a pound, will sow as near as need be, 100 lbs. per acre, each cast covering a space 16 feet long by 8 broad; 350 of these casts will cover an acre, and will use nearly 90 pounds of material. If double this quantity is to be sown, and great evenness is desired, it would be best to use the quarter-pound scoop and sow both ways. The same sized scoop would sow 6 pecks of wheat per acre. In using these scoops, it is necessary to give them a sudden slight twist, just as the contents are thrown out; this spreads the material in a broad sheet which covers the space mentioned, or may be made to do so by a little practice. Great skill in using these may be gained by practising with a pailful of sand, dry ashes, or lime, upon plowed ground. The sown material is then easily seen.

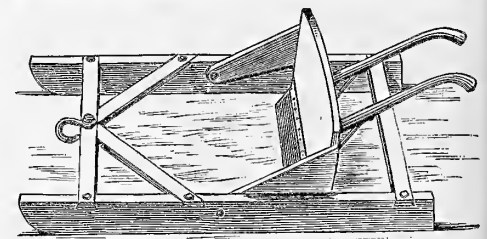
Fig. 1.—TIN.



Fig. 2.—SCOOP.

A Road Leveler.

We recently saw a machine in use to level some ground that had been graded down, which operated very effectively, and would serve a good purpose in smoothing roads. As this work will soon be necessary, we give an engraving and description of this implement. It consists of a frame of 8x6 inch hard-wood timber, made as shown in the engraving, with the ends rounded, so that it will slide over the ground easily. Near the center, the scraper is pivoted on two one-inch iron bolts. The scraper is made of a plank, a foot or more in width, with a slightly curved steel edge, bolted in the front. It is connected with the frame by two side-pieces of hard-wood plank, strongly bolted to it, as seen in the illustration. A pair of plow-handles



SCRAPER FOR LEVELING ROADS.

is fixed to the back of the scraper. The machine is drawn by an ordinary elevis, fixed to the front bar, and a short chain. It should be about 10 feet long, and 6 feet wide, to be used with a pair of stout horses or a yoke of oxen.

A Cheap Drain.

Where neither tiles nor stones can be easily procured, a good, useful drain may be made of hemlock lumber. In soil always wet, such as swampy meadows, or where springs abound, hemlock will last many years. The drain, of which the engraving

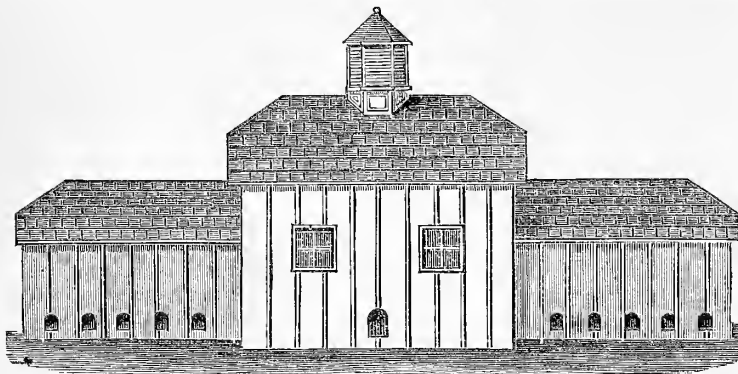


Fig. 2.—FRONT ELEVATION OF POULTRY HOUSE.

the plate is raised up, a stick put under it on the sill, in each corner; the boards are then nailed to it, and the frame is raised, boarded, and battened, and it is strong enough. The roosts are arranged as in figure 1; the piece, C, rests on the plates, and is held in place by cleats, and acts as a hinge. The pieces, D, are secured to it, and the roosts, B, to them.

At A is a ring bolt, and over head a hook. When the house is to be cleaned out, the roosts are raised and hooked up, and are six feet high, so there is no trouble working under them. The door, E, is 6x3 ft. In each wing there are two rows of nests,

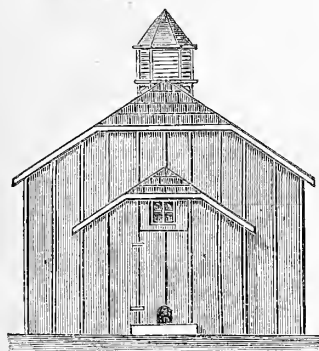
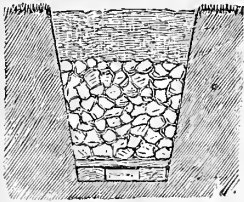


Fig. 3.—END ELEVATION.

each nest 18 x 18 x 12 inches, 12 in a row, 24 in each wing, and 48 in all; the bottom of the lower row is two feet from the ground, and under it are five

ing shows a section, is made of pieces of 2x4 scantling, and boards 7 inches wide. This gives a water space of 4x5 if the scantlings are set upon edge, and 2x4 if they are laid flat and the boards overlap an inch and a half. The water-way may be made larger by hollowing a channel in the bottom. When stones can be procured, this drain is still to be recommended, because the stones can be placed above the boards, as shown in the illustration, and a permanent bottom is thus provided for the stones. When a large volume of water is escaping, both the upper and lower drains will be in action, and otherwise only the lower one. Should one of the drains be stopped, an outlet will be found through the other.



SECTION OF DRAIN.

Aids in Fence Building.

One man, alone, finds it a difficult job to build a board fence, inasmuch as one pair of hands can not readily hold both ends of a twelve-foot board, and nail one end at the same time. By using the hooks shown in the accompanying engraving, this work may be easily done by one person. In the figure is shown a hook and guard for holding the end of the board that comes next to the finished panel. It is so made that, when hung upon the top of the fence post, the board rests upon the hook, and can not slip off. Then the other end of the board is nailed, the middle is nailed, and then the end held upon the hook. The hook is then moved for the next place. To hang the rest of the boards, hooks, such as shown at the left, may be used, of various lengths to suit the different spaces between the boards. The uses of these are too obvious to need description.



FENCE HOOKS.

Covered Cattle Yards.

As the feeding of cattle must necessarily become an important part of our system of agriculture, the study of the best methods of sheltering and feeding animals becomes of interest. This subject has long occupied the attention of English farmers who have been obliged, for the sake of economy of manure, and for the comfort and thrift of the stock, to furnish most complete covered yards in

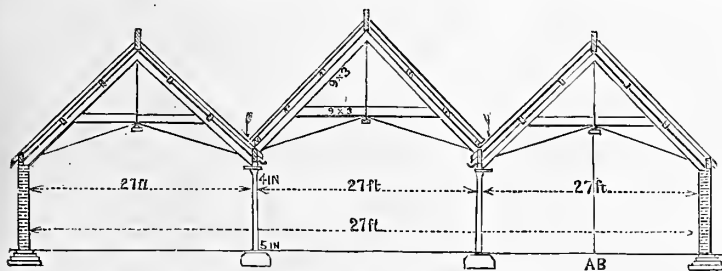


Fig. 1.—CROSS-SECTION OF COVERED CATTLE YARD.

which to feed the animals. A substantial and complete yard for this use has been recently erected, enclosing a space of 112 feet long by 80 feet wide—large enough to accommodate 75 head. The roof rests upon outside walls, and two rows of iron pillars, 10 feet long, support it on the inside. The pillars are 5 inches in diameter, and rest upon foundations of stone work. The center roof rests upon plates, which are supported by the pillars; the outside roofs rest upon flanges upon the posts; the latter are lower than the former, the difference leaving a space for ventilation, and also an escape for the rain water, which is caught in 6-inch gutters and carried off. The roof timbers are all 9 inches by 3, and are tied by iron rods, as shown in figure 1. The portions of the central roof are laid flush,

and held in place by blocks and braces; this is to raise the roof so much more, and to provide a large space for ventilation. The rafters are 18 feet long and 3 x 2½ inches thick. Portions of the roof are glazed to admit a plenty of light. The total cost of the whole building was less than \$1,500. The space enclosed is nearly one thousand square yards, or nearly a quarter of an acre; the cost of the whole building is less than a dollar and a half for each square yard enclosed. The interest on the total cost at 10 per cent, which would repay the whole with interest at 7 per cent in less than 20 years, is \$150, or an annual charge of only two dollars per head of the stock accommodated. This cost is more than repaid by the increased value of the manure made, which has been found to be equal to 50 per cent; and by the saving of feed consequent upon the greater comfort of the animals, and this has been found to be equal to one-eighth of the usual amount consumed. So that in practice, instead of resulting in a charge upon the cattle, the use of these yards gives a direct and handsome profit upon the investment. At figure 1 a cross section of the structure is given, and at figure 2 a portion of the longitudinal section. The amount of

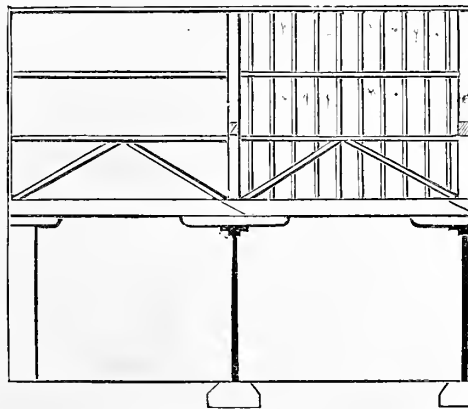


Fig. 2.—LENGTHWISE SECTION OF CATTLE YARD.

manure made by each animal fed in a covered yard, and littered with 20 pounds of straw daily, during the season of 6 months, may be estimated at 432 cubic feet, or nearly 3½ cords. Having had some experience in making manure in covered sheds, and knowing the extra value of such manure, we consider that if this were the only advantage gained, it would be sufficient to repay the cost of the yard.

AGRICULTURE IN KANSAS.—The report of the Secretary of the Kansas State Board of Agriculture, Alfred Gray, Esq., gives a very flattering account of the prospect for the coming year in that State. The condition of the winter grain is fully one quarter (25 per cent) above the average; and that of live stock is almost as favorable. Over a million acres of wheat was grown last year, yielding over 13,000,000 bushels. More rye was grown than in any other State in the Union; of corn over

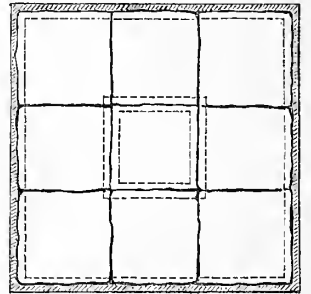
two and a quarter million acres were planted, yielding over 40 bushels per acre, a total of over 103 millions of bushels; of oats 310,000 acres were sown, producing nearly 13 millions of bushels, or an average of over 40 bushels per acre.

AN UNTOWARD DECISION OF THE SUPREME COURT WITH REGARD TO TEXAN CATTLE.—Several of the Western States have a law prohibiting the passage of Texan cattle within their boundaries during the portion of the year when there are no frosts. This law is an absolute necessity to prevent the spread of the so-called Texan or Spanish fever, and the almost total destruction of native stock. A decision has been recently rendered by the U. S.

Supreme Court, which affirms that this protective law is void as being at variance with the Constitution of the United States. The States have the right to exclude any diseased stock, but it must be shown that the stock are really diseased. There is then no longer any protection for cattle, and unless Congress shall pass a general law, regulating the traffic in Texan cattle, disastrous losses will undoubtedly occur. Here is a case in which the Agricultural Department might take the initiative, and do a service which would be vastly more useful than fussing over the culture of tea and coffee.

How He Made a Liquid Manure Cistern.

“W. E.,” Jerseyville, Ill., sends a plan for constructing a liquid manure cistern in the barn yard, for receiving the drainage from the stables and the yards. It is not intended for the rain water from the roofs, although if this were permitted to flow into it, and the manure pumped out and spread upon grass land occasionally, it would be advisable. The cistern is 9 feet square, and lined with brick. A brick wall, enclosing a space 3 ft. square, is built in the center, and several openings are made in this wall, which is for the purpose of supporting the

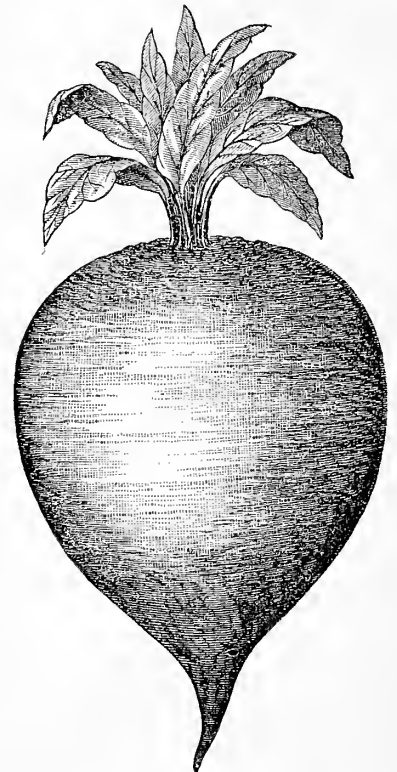


PLAN OF MANURE CISTERN.

covering. The cover is of flag stones, 3 feet square, and there are 9 of these laid, as shown in the illustration. The cistern may be made as deep as may be desirable. It has 8 square feet of surface, and for each foot in depth will contain 20 barrels. If 7½ feet deep, it will hold 150 barrels, which will give a very good manuring to one acre of ground at the rate of nearly one barrel of the liquid fertilizer to the square rod. A square hole may be cut in the center stone to receive a pump.

A New Mangel—“Webb's New Kinver.”

In England, where root crops are of the greatest



“WEBB'S NEW KINVER” MANGEL.

importance, special shows are held of Mangels and Rutabagas. It is said that the Mangel known as

"Webb's New Kinver," has taken more prizes at the recent shows than any other. Mr. Wm. Crozier, of Northport, L. I., has cultivated it, and says, "it is the best Mangel I have ever seen." It is claimed for it, that it grows very smooth and uniform, has but a single tap-root, is very solid, and of a pale orange color. It is claimed that, in England, as much as 80 tons to the acre have been raised of this variety. The engraving shows that it is quite unlike the usual Mangels in shape. It is offered by Messrs. R. H. Allen & Co., of New York, as "the best Mangel in cultivation."

A Scoop for Measuring Feed.

Guess work is rarely economical. It is surprising how far from the truth many of our guesses will be found, if put to the test of accurate measurement or weight. In feeding it is best to be accurate. There is then no waste, the feeding is regular, and the cost is known with exactness. We are now using home-made scoops of the kind shown in the engraving, and find them convenient for feeding meal. The largest one holds two quarts, dry measure, and is 9 inches long, and $4\frac{1}{2}$ inches in diameter; thus holding, making due allowance for the slope at the mouth, about 135 cubic inches. It is cut from a sheet of tin 9×13 , which can be easily procured, and the edges do not meet exactly, thus making it $4\frac{1}{2}$ inches in diameter. The end is made of a piece of board sawn into a circle, or turned in a lathe, and an ordinary door-stop is used for a handle. A one-quart measure would be half the length of this, and if four quarts are needed, it is easy to take two of the 2-quart scoopsful. We find that one size is sufficient for all purposes, and to save the trouble of hunting them when they are wanted, one is kept in each feed-box and grain-bin.



SCOOP.

Fodder Crops—Which to Select.

Fodder crops, to be fed in a fresh condition to stock, are now recognized by thorough farmers as a necessity. Every year this system is practised more widely than before. As land becomes more valuable, and competition amongst farmers more close, it is found more desirable to increase the income from our live stock by all possible means. To enlarge our food supply is the most available resource. Pasturing is now only profitable upon cheap land, or such as can not be made arable. It is also found that to economize the physical exertions, and the consequent muscular waste of the animals, is a matter worth considering. The feeding of green fodder crops in yards, small fields, or even in the stalls, is, to a great extent, taking the place of pasturage of cows, horses, sheep, and pigs. We are obliged to make many blades grow where one grew before, to support the necessarily increased number of animals, and it has been found that by procuring a thrifty growth of green-fodder, we can feed as many animals from one acre, as we could feed from five acres or more of pasture. For cows and horses, it is necessary that these crops be cut and carried to them, else many times as much food would go under foot as would be eaten. But sheep and pigs may be made to consume the crops from the ground, by penning them within a narrow strip enclosed by hurdles or portable fences, that can be moved as the ground is cleared by them. The manner of feeding may be varied to suit circumstances, and every farmer can easily judge for himself what would be most convenient and proper for him. There is so much latitude in the choice and management of the different crops, that to select the best is sometimes difficult. There are early and late ones, and it is very important to alternate these so that the ground may be always occupied, and two or three may be grown in succession in one season. At present, fodder corn is grown more than anything else for this purpose, but there are several other crops, of quicker growth

early in the season, and that give an equally heavy product. Oats and peas mixed, $2\frac{1}{2}$ bushels of the former, and $1\frac{1}{2}$ of the latter, may be sown a month or six weeks before it is safe to plant corn, and will yield 8 or 10 tons per acre, of the best and richest milk-producing feed. Barley and vetches, mixed, and sown in the same proportion, are also a valuable green crop, and are especially well adapted to horses. Either of these crops may be followed by sweet corn of an early variety, and this may be cut and removed in time for a crop of millet or turnips. These three crops may easily be taken from the same ground in six months, and in the aggregate will yield 30 to 50 tons per acre without very copious manuring. Probably there are no others that are so prolific as these. It is widely supposed that there is no advantage in feeding sweet corn over the common field variety. The error of this is evident when we consider how much more sugar there is in the sweet corn than in the other, and sugar is nutriment. In many places near towns and cities, where green sweet corn ears can be sold, this crop may yield two profits, one from the ears, and the other from the stalks; some wide-awake farmers have discovered this, and take advantage of it. It is besides an excellent cleaning crop. Some experiments are being made in the Northern States in growing the southern "field," or "cow" pea as a fodder crop. How this will result we can not say at present; we have procured seed for a trial of this crop the present season. A bushel of seed per acre, should be sown in drills, and three months' time is required to mature the crop for cutting. In the South, this crop is of great value for feeding green, and with this, winter oats, corn, and millet, may be made to give a succession. Cabbages and kohlrabi are much neglected as fodder-crops, although they may be very conveniently grown, by planting them in rows between a corn crop. The corn protects the young plants, and when it is cut they occupy the whole ground. The cabbage plants are raised in seed beds and transplanted at the proper season; kohlrabi is sown in drills as turnips, and thinned out to one foot apart in the drill; the thinnings may be set out at the same distance. This latter crop does not impart a disagreeable flavor to the milk when fed to cows. Prickly Comfrey, at the North at least, is still a matter of experiment; the coming season should allow its value to be ascertained.

Root Crops for Stock.

BY PETER HENDERSON.

While "Mangels" and other roots for stock feeding have been largely cultivated in Europe, for the past 30 years, it is surprising how little it is yet done here, particularly when we know how well our soil and climate are, in most sections, adapted to the purpose, and how great are our necessities, particularly in those States, where the long dry summers diminish the crop of hay and other fodder plants. The most important root crop for stock is the mangel-wurzel, which, I believe, can be grown and matured in any good soil in any State in the Union. As with all root crops, a loose friable soil, with a sandy or gravelly subsoil, is better adapted to it than a stiff soil with a clayey subsoil. All root crops require deep culture; the soil should always be plowed to the depth of 10 inches, and, if it can be done, it will pay well to let the subsoil plow follow in the wake of the other, and stir the subsoil 10 inches more, making a loosened depth of 20 inches.

In many of our deep, rich, new soils, an excellent crop of mangels, or other roots, can be grown without manure; but when necessary to use it, nothing is better than well-rotted stable manure, composted with as much muck or turf from roadsides, spread evenly over the surface before plowing, at the rate of from 6 to 12 tons per acre; in absence of stable manure, bone dust, superphosphate, or guano should be applied, at the rate of from 300 to 500 lbs. per acre; but all such concentrated fertilizers should be sown on the surface, after plowing, and harrowed in, until thoroughly mixed with the soil. Before sowing, the ground should be

smoothed as evenly as possible with the back of the harrow, to present a smooth and level surface for the reception of the seed. The distance apart between the rows for mangels, will vary with the character of the soil. In light, sandy soils, the rows should be 24 inches apart, with 9 inches between the plants, but in strong, rich, deep soils, the rows should be 30 inches apart and 12 inches between plants. This is what is termed the "flat culture." Mr. Wm. Crozier, of Northport, L. I., works on an entirely different plan from this, and his success in producing enormous crops shows it to be well worthy of imitation. After thoroughly plowing, harrowing, and smoothing the land, he strikes out furrows with the double mould-board plow (if this is not obtainable, any plow that will make such a furrow will do), 30 inches apart, the furrow is 6 or 7 inches deep; these furrows are then half filled up with a compost made from stable manure and turf parings from the road sides, about equal parts, thoroughly mixed and decomposed, or if yet rough and unrotted, it is pressed down in the rows with the feet; after the manure has thus been placed in the furrows, the plow is run up between on each side, so as not only to cover in the manure, but to raise a ridge as high as the furrow was deep; these ridges are now run over with a roller or a light chain harrow, so as to take off or flatten down 2 or 3 inches of their apex, and so broaden the ridge as to allow the seed sower to work on it to deposit the seed. Where stable manure is not obtainable, Mr. Crozier recommends blood and bone fertilizer, or bone dust, sown in the furrows at the rate of about 300 lbs. to the acre, but where such fertilizers are used the ridge over the furrows should not be raised so high as over the manure. About 8 lbs. of seed is used to the acre, if put in with the "Planet," or other seed drill; when sown by hand, fully double that quantity would be required per acre. Mr. Megatt, the extensive seed raiser, of Hartford, Conn., recommends that, in using the seed sower, the hopper should never be more than two-thirds filled, and should never have any lid or cover, so that the operator can see its action, and should be shaken clear of all dust, as it accumulates, so that the seed may be evenly distributed. When the plants are up, they are to be thinned to 12 or 14 inches apart, and the land is well cultivated, so that before the crop covers the ground the ridges have been so levelled down that the rows of roots are nearly as low as the spaces between.

This ridge system of culture, both for mangels and turnips, although it requires more labor, is a saving in manure, and there is no doubt that these crops are greatly benefited by having the soil gradually taken from the ridge by the cultivator, and exposing their roots, or "bulbs," to the air. The best time for sowing, in the latitude of New York, is from May the 1st to the 15th. The time must, of course, be varied according to locality; probably the best guide in all sections, is to sow from 8 to 10 days before the time that corn is usually planted. The varieties most used are: "Webb's Mammoth," and "Norbiton Giant," (red varieties), and the "North" and "Kinver Globe," both yellow kinds. The average weight of the crop of an acre in mangels is 40 tons; though, in some soils, they have yielded double that weight. Of course their cash value, as compared with hay, (rating hay at \$15 per ton), will vary largely under different circumstances, but Mr. William Crozier considers that the average value of mangels for stock feeding purposes, to be \$4 per ton, or \$160 per acre. While hay would be, under the same condition, (estimating 2 tons per acre), only worth \$30 per acre, the expense of seed, manure, and cultivation of the mangels, at the utmost, need not exceed \$80 per acre, so it is clearly seen that the crop for feeding purposes is a profitable one. What has been said on the modes of culture for mangels, may be applied

To Turnip Culture.

except as to the time of sowing. The Swedish or Ruta Baga varieties of turnip, should be sown, in this latitude, from May 25th to June 25th, and the Yellow Aherdeen and Strap-leaved kinds, from July 1st to the middle of August. When sown at these dates, the distance apart may be the same as for mangels, but both of the classes may be sown a

month later—that is, the Ruta Bagas may be sown from June 25th to July 25th, and the Strap-leaved kinds from the middle of August to the middle of September, but, when sown thus late, they should be both between rows and between plants, one-third closer. The varieties that we find best, are “American Ruta Baga” and “Purple-top Ruta Baga;” of the Strap-leaved kinds, “Red-top Strap-leaved” and “Yellow Aberdeen.” Mr. Crozier’s estimation of value of Ruta Bagas, as compared with hay, (at \$15 per ton), is \$5 per ton; average crop, 25 tons per acre, or \$125. Purple-top Strap-leaved, or Yellow Aberdeen turnips, he estimates at \$3.50 per ton; average crop, 35 tons per acre, or \$122.50. Estimating the expense of culture at half the gross value, we have still a large margin in favor of the crop; besides the Strap-leaved turnips can be sown after barley, oats, or rye.

Carrots may properly come under the head of “Root Crops for Stock,” though mainly grown for horses, but, even for horses, Mr. Crozier says that he considers them far inferior to Ruta Baga turnips. This is in opposition to the received notion, but we know that public opinion in matters of this sort is often wrong, and when we consider the marked success of Mr. Crozier, as a raiser of both horses and cattle, his opinion in this matter is entitled to consideration. The land for carrots should be prepared exactly as for mangels; it must be deeply plowed, harrowed, and thoroughly pulverized, and whatever kind of fertilizing material is used, it should be thoroughly mixed with the soil to a depth at least of 10 inches. The same quantity and kinds of fertilizers should be used as recommended for the flat culture of mangels, though in new lands, or lands on which corn has been grown after sod, enough of the fertilizing material will usually be left in the soil to mature a good crop of carrots without any manure, provided the soil is deep and in good condition. I once grew 20 tons of carrots per acre on land in this condition, without using a particle of manure. Carrots should be sown from the 1st to 30th of May, and when sown by a seed drill, about 4 lbs. of seed to the acre is required. The rows should be 2 feet distant, and the plants thinned out to 5 or 6 inches apart. An average crop is 15 tons, of the “Long Orange” variety, to the acre, and the present price averages \$15 per ton in New York market. The “White,” or “Yellow Belgian” Carrots would give one-third more weight, but the quality is inferior and the price correspondingly lower. One of the seeming obstacles to raising root crops on a large scale is the lack of a proper place for keeping them in winter.

Keeping Roots in Winter.

A general impression prevails that they must be kept in cellars or in a root house specially built for the purpose. There is not only no necessity for a special root house, as the simple and cheap method of preserving them in pits in the open ground is far better. I will briefly describe our plan, which I have practised with all kinds of market garden roots for 25 years. Mangels, in this section of the country, are dug up towards the end of October, or just after our first slight frosts; they are then temporarily secured from severer frosts by placing them in convenient oblong heaps, say, 3 feet high by 6 feet wide, and are covered with 3 or 4 inches of soil, which will be sufficient protection for 3 or 4 weeks after lifting, by that time, say the end of November, they may be stowed away in their permanent winter quarters. For turnips and carrots, there is less necessity for the temporary pitting, as they are much harder roots, and may be left in the ground until the time necessary for permanent pitting, if time will not permit to secure them temporarily. The advantage of this temporary pitting is, that it enables them to be quickly secured at a season when work is usually pressing, and allows the period of their permanent pitting to be extended into a comparatively cold season; this is found to be of the utmost importance in preserving all kinds of roots—the same rules regulating the preservation in winter, apply as in spring sowing; while in this section of the country it must be done not later than the end of November; in some of the Southern States, the time may be extended a month later,

while in places where the thermometer does not fall lower than 25 degrees above zero, there is no need to dig up any of these roots at all, as that degree of cold would not injure them. The permanent pit is made as follows:—A piece of ground is chosen where no water will stand in winter. If not naturally drained, provision must be made to carry off the water. The pit is then dug 4 feet deep and 6 feet wide, and of any length required. The roots are then evenly packed in sections of about 4 feet wide, across the pit, and only to the height of the ground level. Between the sections, a space of half a foot is left, which is filled up with soil level to the top; this gives a section of roots 4 feet deep and wide, and 4 feet long, each section divided from the next by 6 inches of soil, forming a series of small pits, holding from 6 to 12 barrels of roots, one of which can be taken out without disturbing the next, which is separated from it by 6 inches of soil.

Scotch Method of Wintering Roots.

Mr. Crozier practises with great success the Scotch method of preserving root crops in winter, which he thus describes: A dry spot being selected, where no water will stand in winter, a space is marked out 6 feet in width, and of any length required; this bed is excavated 10 to 12 inches deep, and the soil is thrown out on the bank. The roots, either mangels, turnips, carrots, or potatoes, are built up evenly to a sharp point about 5 or 6 feet in height, so that the roots form almost an equal sided triangle, 6 feet on the sides. This bed of roots is then thatched over with 4 inches of straw, after which the earth is banked over the whole, about 1 foot in thickness. This covering of earth and straw is sufficient to keep out any degree of frost that we have in this latitude, though we rarely have it much below zero, in colder or warmer sections, judgment must be used to increase or lessen the covering. Vents, or chimneys, made by a 3-inch drain-pipe, or anything of similar size, are placed every 6 or 8 feet along the top of the pit, resting on the roots, so that the moisture generated may escape. In extreme cold weather, these vents, or chimneys, should be closed up, as the cold might be severe enough to get down to the roots. Pits, so constructed, rarely fail to preserve roots perfectly, until late in spring, and are in every respect preferable to root cellars. For no matter how cold the weather may be, they are easily got at; the end once opened, the soil forms a frozen arch over the pit. Mr. Crozier says he has practised this plan for years on his farm at Northport, L. I., some of his pits containing hundreds of tons of mangels, etc.

How to Use Artificial Fertilizers.

In using strong chemical fertilizers, it is necessary to remember that 100 lbs. of such a mixed fertilizer as Ville’s “Complete Manure,” as compounded by the Mapes Formula Company, contain very nearly as much of the useful chemical elements as one ton of ordinary manure, and further, that these elements are in a directly active and soluble state. If, in applying these fertilizers, we should place them in contact with the seed, the young germ would be fatally injured, and the plant destroyed before it could appear above ground. To prevent this danger, all these concentrated fertilizers should be thoroughly mixed with the soil before the seed is sown, or young plants are transplanted. Our own practice is as follows. For wheat, rye, or other similar crops, the fertilizer is spread in the fall, immediately before the seed is sown; the seed is then sown and both are harrowed in together. In spring we sow the fertilizer upon the surface, and either leave it to be carried in by the rains, or we harrow it in, when we harrow the wheat or rye, with a light, sloping-tooth harrow, such as the Bradley reversible or the Thomas harrow. For corn we scatter a portion of the fertilizer along the rows as soon as they are marked out; it is then well mixed with the soil in the process of planting and covering, and while it is near the seed, it is not in direct contact with it, except in very small quantities, which are thoroughly incorporated with the soil. Afterwards, when the corn is hoed, a second

portion of the fertilizer, say 100 lbs. per acre, is scattered along the drills or hills, on each side of the plant a foot or so distant, and then the crop is cultivated or hoed. For field crops of vegetables that are transplanted, such as cabbages or tomatoes, we apply the fertilizer on the harrowed ground as soon as it is marked out, and when setting out the plant, the soil and a part of the fertilizer are mixed together. Afterwards the remainder is given at the first cultivating or hoeing, as for corn. By such methods as these, the young and tender roots are not brought into close contact with the concentrated chemicals of which the fertilizers consist; but they are fed gradually as they reach these in their growth, or as these dissolve and are carried down to the roots by the rains. Lastly, it is well to give the caution, not to leave the fertilizers about where poultry, sheep, or other animals, can pick up fragments or lick the bags; nor to wash the bags in water-troughs, streams, or ponds, where animals drink, as some of the chemicals are poisonous.

POPULARITY OF THE AYRSHIRES.—As a sign of the returning popularity of the valuable Ayrshire cattle might be cited the fact, that at the fair of the New York State Agricultural Society, the Ayrshires outnumbered the heretofore preponderating Jerseys. The Ayrshire, as a butter-making breed, is hardly a rival of the Jerseys; these two should be companions, and not rivals, for each one has invaluable points. A fact of curious significance also, at this fair, was the absence of several of the old successful show-herds, and the entry of new exhibitors, who carried off the honors. It is further worthy of remark that, with all our success in breeding excellent animals, our prize-takers are too frequently imported. Would it not be well to keep prizes only for native bred animals?

IS MACHINERY PROFITABLE?—The grand display of agricultural machinery at the New York State fair at Rochester, in September last, not only attracted much favorable notice from farmers, but also some adverse criticism from other persons with little experience in the use of machinery. The question often arises, “is it profitable to use machines in place of hand labor under all circumstances?” To this might be replied, very decidedly, that it is not. There are some cases where hand labor is more profitable; for instance, a farmer who has nothing to employ his time during the winter, may better use the flail to thresh his grain, than to hire or own a threshing machine to do the work. Although in this case the threshing might cost five times as much in labor and time, yet here time is not money, or at least it may appear that the old adage is at fault for once. But beneath this circumstance even, there lies a mistake. This is, that no farmer should find his time so valueless, that he can afford to spend it in earning 50 cents or less a day, (which is what it costs to thresh 10 bushels of grain with a machine,) and it is a mistake to manage his business so that he has nothing else to occupy his time. This is the principle that should lie at the bottom of this question of the value of machinery. Every man should so arrange his business that “time is money” to him, and if he can save time by using a machine of any kind, then he saves money, and its use is profitable.

FEEDING FOR MILK.—“Litchfield.” The most economical food for milk cows is a mixture of hay, meal, and bran; and the most economical way of feeding these is to cut the hay, moisten it, and sprinkle the meal and bran over it. This gives some trouble, but it pays. From our own practice, we believe 25 per cent of the feed is saved. One bushel-basket of cut hay, and 2½ quarts of corn meal and bran, mixed in equal portions, is a feed for a cow in good milk. To some cows more of the meal and bran may be given profitably; this must be found by testing the different cows. The above feed is for half a day—that is, is given twice in the day, making 5 quarts of the meal and bran daily. In addition to the above feed, a few pounds of dry hay, or some roots, may be given at noon.

The Use of Corn for Fuel.

Some journals, whose conductors know very little about corn growing, and other things in the

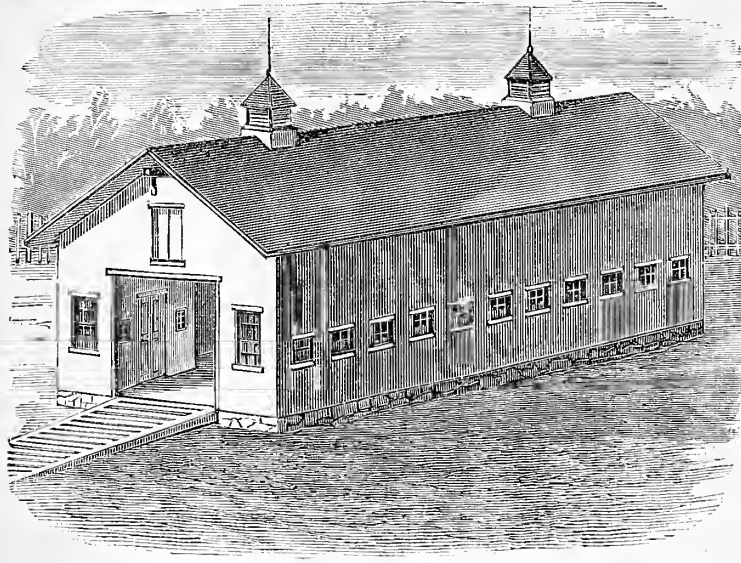


Fig. 1.—PERSPECTIVE VIEW OF LIVERY STABLE.

West, make their annual outcry in regard to the extensive consumption of corn for fuel, which they consider a great and inexcusable waste. Suppose the Nebraska or Minnesota farmers were to sell two tons of corn for six dollars, and buy half a ton of coal for the money, and the corn were at once taken to a distillery and turned into whiskey. Would this be any better? The farmer would probably have to make two journeys of 10 or 20 miles each, with his loads, and be out of pocket at least \$6 by his trade. The fact is, corn is an excellent fuel, and although it may seem at first sight to be wrong to burn up an article of food, yet it is but a mere sentiment which overlooks the fact that to warm one's self by a fire, and to do the same by the consumption of food, are in the end precisely similar in effect. If more warmth can be procured by consuming, in a stove, a dollar's worth of corn, than a dollar's worth of coal, it is a legitimate use for the corn; but when there is neither coal nor wood at hand, what should these people do when the winter's cold pinches, if the corn from their well-filled cribs could not supply them with fuel?

A Plan for a Livery Stable.

At the present time, when economy must be strictly observed by many persons whose income



Fig. 2.—PLAN OF STABLE.

is reduced by reverses, or lessened profits of business, the livery business is increasing its extent. Many who have hitherto kept carriages and horses, have been obliged to give them up, on account of the expense, and to hire them from a livery stable

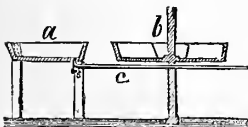


Fig. 3.—TROUGHS.

when occasionally needed. This has resulted in a greatly increased demand for hired horses and carriages, which shows itself in the curious way, amongst others, of inquiries made of us about building and furnishing livery stables. The essential needs in a livery stable are: a convenient arrangement for stalling the horses, and for storing away the carriages. There must be means pro-

vided for perfect cleanliness, as nothing injures a carriage more quickly than the ammoniacal vapors from a foul stable. A proper arrangement for cheapness and convenience would be as follows: The building should be from 25 to 36 feet wide, ac-

ording to the ground that can be spared for it, and as long as necessary to accommodate the number of horses to be kept, allowing 5 feet for each single stall. Generally, it will be found best to build so that additional length can be added, as business increases. The inside arrangement is as shown at figure 2. The office is placed at the entrance upon one side. Opposite, is the pump and water-trough, this trough is connected by pipes with each feed-trough, one end of which is made water-tight and separate for water. The connections are made as shown at figure 3; *a* being the water-trough, *b*

the watering boxes for two adjoining feed-troughs, both being supplied by one inlet pipe. The pipe goes through the stable and has a cock beneath the water-trough, by which the water-boxes are drained into the sink. The pump should be one that can be used either for a force or a suction pump, so that, by means of hose, the water can be carried to any part of the building. Along the center, is a row of trap-doors, through which the manure and drainage of the floor are dropped into the cellar. Alternating between the doors, are posts furnished with hangers, upon which the harness is suspended. Opposite to the horses is the space for carriages. This is provided with shallow gutters, to drain the water from the washing into the trap-doors and the cellar. In front of the horses, is a row of small windows, one for each stall, provided with lattice shutters, sash, and fly-proof netting, so as to give plenty of ventilation, but only moderate light. These should be above the horses' heads and near the ceiling. The hay and feed bins should be kept above, and spouts provided to drop the feed into each trough below. That no hay or other matter may enter the water-pipe, the inlets are covered with mushroom strainers. At figure 1 is an elevation of the building.

A Combined Carriage and Tool House.

A number have asked for a plan of a carriage, wagon, and tool house in one building, suitable for a large farm. The accompanying engravings give a plan for such a building, with a granary above. The structure may be 16 or 18 feet high to the eaves, which will give a space of 9 feet in the clear for the lower story, and 6 feet in the clear for the granary at the walls, and 10 or 11 feet in the center between the bins. It should be at least 24 feet wide, and 45 feet long, to give ample space for moving about in it. The wagon and cart house would be at one end, and 24 feet square, shown in the plan (fig. 1), to contain three wagons and a cart. The doors of this portion slide upon

rollers, and, to facilitate the movements of the wagons in or out, are in three divisions. The carriage house is in the center, with the entrance at

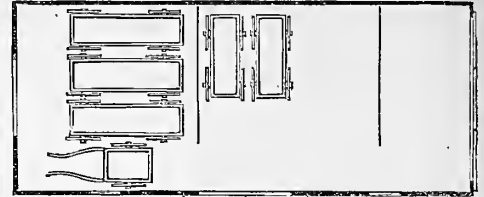


Fig. 1.—PLAN OF WAGON HOUSE.

the front. Here is room for two carriages, and a tool house adjoining, with entrance at the end opposite to that of the wagon house. In the carriage house there should be a well and a force pump furnished with a hose, for the purpose of washing off

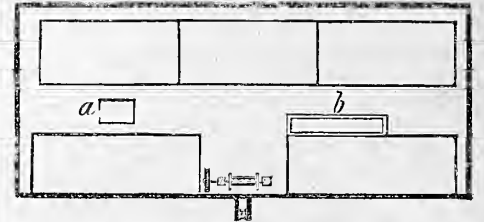


Fig. 2.—PLAN OF THE UPPER FLOOR.

the carriages, and the floor should be made slightly sloping each way to the center, with a gutter there to carry off the water to the rear. One of the Blunt's "Universal Pumps," made by the Nason Manufacturing Co., of New York, would be most useful for this purpose, being the most easily worked, and the most effective of its kind that we know of. It is either a force pump or a draw pump. If it would be more convenient to have the pump outside of the building, one of the "Standard Non-

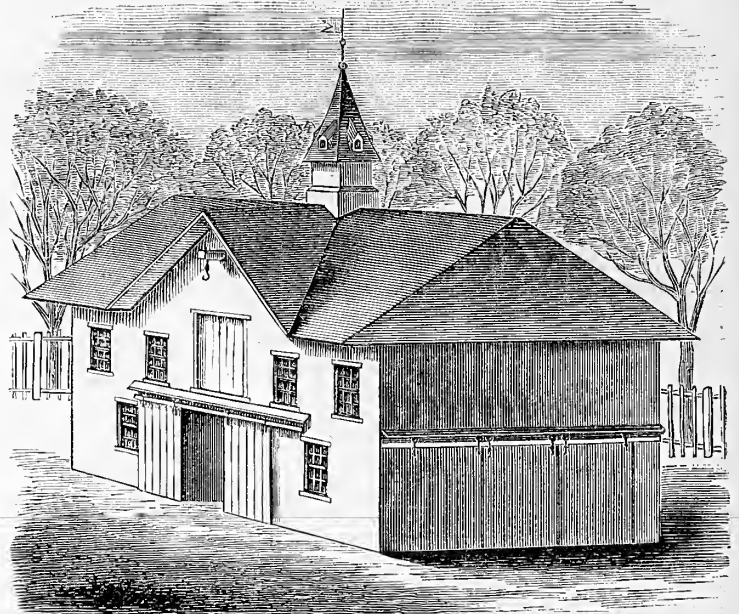


Fig. 3.—VIEW OF COMBINED WAGON AND TOOL HOUSE.

freezing" out-door pumps, of the same makers, would be found useful, either in winter or summer. In case of a fire among the buildings, the pump would be found of the greatest value. The upper floor may be reached by a stairway outside, or from the inside, as may be most convenient. The plan of the bins is given at figure 2. On one side are the three grain bins, and on the other, two lathed bins for corn in the ear. Between these is the hoisting wheel and door; the plan of the hoist is shown at figure 4; *a* being the winding barrel, *b* the pulley wheel, with an endless rope hanging upon it, and *c* the pulley in the cat-head. The hoist is supported by hangers fastened to the roof timbers and the plate. Figure 3 is the elevation, which may be changed to suit the wishes or the means of the builder. Here it is made perfectly plain, in order to meet the wishes of the most economical.

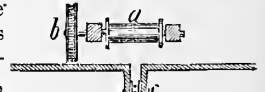


Fig. 4.—HOIST.

The Common Reed.—*Phragmites communis*.

The most stately and conspicuous native grass of the Northern States is the Reed. It is also one of the most widely distributed, as it not only extends completely across this continent, but has an equally wide range in the Old World, from the tropics to

purpose, and they are sometimes used for the construction of huts. Excellent sereens, or mats, for garden purposes, are made by placing the stems side by side, and interlacing them at the ends with osiers. The Swedes are said to use the panicles to make a green dye for woolen stuffs. Like many other plants which naturally grow in wet places, the Reed bears removal to the drier soil of the gar-

naus, and is borne by two native species of shrubs or small trees, and by a third, found in Japan. Belonging to the same family with the Camellia, and the Tea, they have a general resemblance to those well known plants, though in the case of the *Stuartias* the leaves are deciduous. That such showy plants should not have received a common name, is probably due to their comparative rarity in the



THE COMMON REED.—(*Phragmites communis*.)



THE STUARTIA.—(*Stuartia pentagyna*.)

the arctic zone, and even occurs in Australia. It is found in swamps and marshes, and along the edges of ponds, sometimes reaching the height of 12 feet, and having, at a distance, much the appearance of Broom Corn. In less favorable localities, it grows to only 5 or 6 feet, and we have seen it flower when only two feet high. The leaves are numerous, on large plants about two inches wide, and the stem is terminated by a large, soft, purplish panicle of flowers, which usually gracefully bends to one side, and is from a few inches to one or two feet long. The individual spikelets are from $\frac{1}{4}$ to $\frac{3}{4}$ inch long, and each contains three to six flowers; the lowest one is staminate, or neutral, while the others are perfect; the little stalk which supports the florets is furnished with very long and silky hairs. The engraving gives the general appearance of the flower cluster or panicle, though reduced in size, and below is a separate spikelet, about twice as large as natural. The plant has numerous strong underground stems, or root-stocks, which extend in all directions, and have been known to reach the length of 40 feet; these make the Reed a most serviceable plant in securing the banks of rivers, as by their interlacing they bind the soil and prevent washing; it has also been planted to aid in the reclamation of low lands. The foliage is eaten by cattle when it is very young and tender, and then only when other food is scarce. In Northern Europe the stems are used for thatching; they are regarded as the most durable of all materials for the

den, and may be used in contrast with *Arundo Donax*, *Erianthus*, and other large ornamental grasses. In the present popularity of grass bouquets, the Reed has been used in large quantities. When dry, the spikelets open, and expose the silky hairs, which are so abundant that the panicle has a very different appearance from that it presents when growing. For this purpose, the panicles should be gathered when they are in flower, which will be known by the presence of stamens, as in the spikelet at the lower part of the engraving. If left until the seed is ripe, or even partly developed, the spikelets are apt to break apart and shed their down in an annoying manner. Formerly this was placed in the genus *Arundo*, and in some of the European works of the present day it will be found as *Arundo Phragmites*, but the name generally accepted is *Phragmites communis*, as the structure of the flowers is essentially different from those of the *Arundos*. The name *Phragmites* is from the Greek, meaning "growing in hedges," the application of it to this plant is obscure, as it is not a hedge-plant.

Fine Ornamental Shrubs—The Stuartias.

The indifference of Americans to beautiful native plants, is nowhere more strikingly shown than in their almost entire neglect of the Stuartias. The genus was dedicated by Catesby to John Stuart, Marquis of Bute, who was a correspondent of Lin-

wild state, but this is the less to be regretted, as *Stuartia* is a pleasing name, and, like *Magnolia*, may well serve in both botanical and popular nomenclature. Our two species are, *Stuartia pentagyna*, (the Five-pistilled Stuartia), found in the mountains of Tennessee and Virginia, to those of North Carolina and Georgia, and *S. Virginica*, (the Virginian Stuartia), which extends from Virginia to Florida, and westward. The first named is the showier as well as the hardier of the two, and is the one offered by a few of our nurserymen. This, *Stuartia pentagyna*, has a bushy habit, and ultimately forms a dense clump 10 to 15 feet high, and as much in diameter. It has oval, pointed leaves, usually with minute teeth on their margins, and downy on the under surface. The flowers, from the axils of the leaves, on very short stalks, are two and a half inches, or more, in diameter; the calyx is covered with silky hairs, and often tinged with red. The petals, usually five, but sometimes six, are cream-colored, sometimes purplish at the base, and beautifully scalloped or crimped on the margins; the stamens are numerous; the pistil has five distinct styles, and ripens into a woody, ovate, pointed 5-celled pod, with one or two seeds in each cell. The other species (*S. Virginica*) differs from this in having downy leaves, smaller, white flowers, and purple stamens; its styles are united into one, and the pod globose. It is less hardy than the other, and probably can not be depended upon north of Philadelphia. The first named species, *Stuartia*

pentagyna, is quite hardy in the vicinity of New York, and, if we mistake not, in the neighborhood of Boston also, but does not prove hardy at Rochester, N. Y. Wherever it can be grown, there is no more desirable shrub, as it is handsome for its foliage alone, and when covered with its large flowers, like a single *Camellia*, it is one of the most beautiful of all flowering shrubs. The engraving gives the appearance of a single flower—though somewhat reduced in size, and the form of the leaves, but of course fails to give the effect of a large shrub, loaded with flowers of this kind. Another point in favor of the *Stuartia*, is the time at which it flowers; in August, when the earlier shrubs have quite finished blooming, and before the later flowering ones appear, this comes with a most welcome profusion of flowers. This shrub has two faults; it is native, and a good specimen can be bought for a dollar. Were it Japanese, and sold at \$5 or \$10 a plant, it would probably be much more sought after. Several years ago, the Messrs. Parsons, of Flushing, N. Y., knowing the real merits of the *Stuartia*, were at much trouble and expense in sending a collector into the mountains of the Southern States, who procured a large stock of it. The Messrs. Parsons & Sons Co., of the Kissena Nurseries, Flushing, N. Y., inform us that their large stock is especially fine, it having been several times transplanted. We know of no shrub more attractive in a collection, or which is more worthy to stand as a single specimen than this *Stuartia*—in all localities except those in which the winter is very severe. Those who wish a single shrub to ornament a city front yard, may properly select this, as it will be in full bloom at midsummer, when their neighbor's plants are quite without flowers.

Propagating Plants from Leaves.

That plants may be propagated by cuttings is well known, as few persons, who have cultivated flowers at all, have not grown a rose or a geranium from "a slip," which is the popular name for what gardeners call a "cutting." But that some plants may be propagated from their leaves, is new to many. One plant, *Bryophyllum calycinum*, popularly known as the "Leaf Plant," was figured in June, 1876. The leaves of this, when they fall to the ground, form small plants from the notches on their edges. Several plants are regularly propagated by florists from leaf cuttings. A number of the showy plants of the *Gesneria* Family are multiplied in this manner, as are all of the *Begonias*, of

gate them, the florists put a leaf on the sand of the cutting-bench, and make several cuts through its numerous strong veins. After a while buds appear at these wounded places, and these develop into plants, as shown in the engraving, from a leaf furnished by Peter Henderson, Esq. Some florists cut the leaf into little pieces, which are laid upon the sand, and produce the same results. Those who wish to try this method of propagating, should take care to give the leaves proper shade, else they may dry up before forming roots. Many other plants have been propagated from the leaf, including the orange and the rose. But, besides for certain *Begonias*, it is employed, in a practical way, on a number of the succulents, such as *Echeverias*, *Kleinias*, *Paehyphytums*, etc. The well-known method of propagating lilies, is really propagating from the leaves. The fleshy scales of the lily bulbs, which are broken off, and treated as cuttings, are only the thickened bases of the lily leaves, and though their upper green portion has dried away, the scales are really leaves. No doubt the number of plants that may be multiplied from leaf-cuttings, may be largely increased, and it offers an interesting field to those who wish to try experiments.

A DANGEROUS PET.—Several of the English papers have given accounts of a remarkable parasite which, in the Glasnevin (Scotland) Botanic Gardens, has adorned the stems of a *Forsythia*, "with a dense entanglement of pearl-colored, Lily-of-the-Valley-like flowers, smelling as sweetly as a *Heliotrope*," and much more in the way of enthusiastic description; after this we are told that the plant is one of our American *Doddies*, *Cuscuta Cephalanthi*—the correct name of which, by the way, is *C. tenuiflora*. We should think that English cultivators had had sufficiently disastrous experience with their *Clover* and *Flax* *Doddies*, to make them cautious how they naturalize this larger-flowered and more showy American species. Should this become established, it may prove as undesirable in their plantations as our *C. compacta* is with us. This, in some of our nurseries, has proved to be a real pest, attaching itself to and living upon the young stock, and exhausting it much to its detriment.

Forwarding Lettuce—A New (?) Way.

BY PETER HENDERSON.

The other day, in riding out on the N. J. Central R. R., I had occasion to go a short distance across the country, south of Plainfield. I noticed an old

colored man digging parallel trenches 2 feet apart, about 6 inches deep, and 10 inches wide. He had just completed about a dozen of them some twenty feet in length, and had begun to scatter manure in the bottom of the trenches to be dug in. I was completely puzzled by the operation; he was evidently at some kind of gardening, but such trenching, in the middle of February, I could not understand. On questioning the old man, I found that these were his forcing pits for Lettuce—which he planted 6 inches apart in the trenches, and covered up at night and in cold days with single boards a couple of inches

wider than the trenches. This method, he assured me, he had practised for many years, getting his lettuce two or three weeks earlier than when planted without such protection. He was careful to take off the boards and expose the plants to the light on mild days. His "frame

ground" had been well chosen, it being a sheltered, rather sandy spot, facing the south. I suggested to him that his "pits" might be used for protecting tomato plants, after his lettuce was cut, but Sambo had nothing to learn from me; he had always used them for that purpose, only digging his trenches deeper; and had raised, he said, the best "tomatoes" in the neighborhood, from plants set out in his trenches about May first, after his lettuce had headed up. Sambo's forcing pits were not extensive—they only held about 600 lettuce plants; but these brought him five cents a piece at the village groceries, and it was certainly a productive industry in a small way that is worthy of imitation.

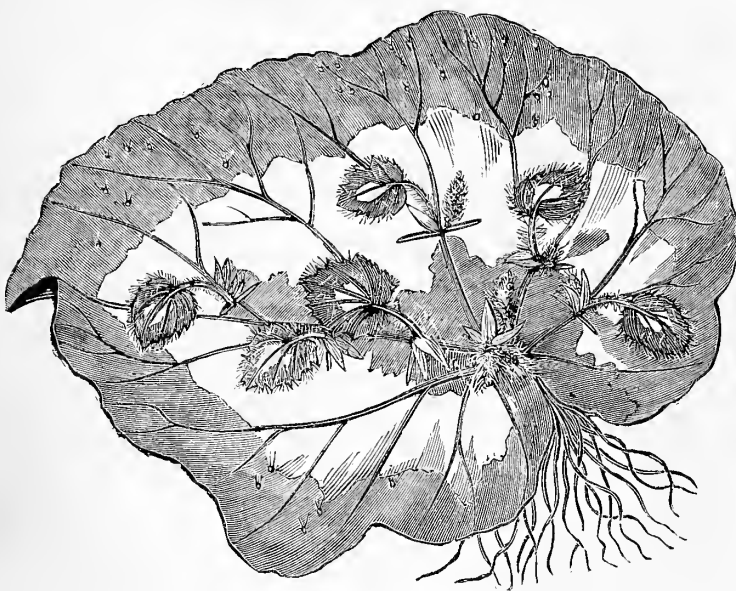
The Catalpa and Its Uses.

Prof. C. S. Sargent, Director of the Arnold Arboretum, takes a lively interest not only in trees as trees, but also in their uses; thinking that the merits of the *Catalpa* had been overlooked, he was collecting materials for an article for the *American Agriculturist*, when he came across a pamphlet entitled: "Facts and information in relation to the *Catalpa* Tree, (*Catalpa bignonioides*). Finding his proposed task so well done by the author, Prof. Sargent, in the following note, gracefully gives full credit to another worker in the same field. He says: "Mr. Barney has brought together, in a pamphlet of 26 pages, (which may be procured from the author, E. E. Barney, Esq., Dayton, Ohio,) several letters contributed by him, at different times, to the "Railway Age," in regard to the *Catalpa*, to which are added much testimony and information in regard to its economic value. By what must seem most satisfactory evidence, it is shown that the wood of the *Catalpa*, although soft and comparatively light, possesses, to a remarkable degree, the power of resisting decay, in this particular equalling and even surpassing the *Locust*. He claims that for rail-road sleepers, the wood of no other tree, which has yet been tried for the purpose, compares with it. The qualities which make a tree profitable to raise for sleepers are: that it should grow rapidly and easily; that its wood should be durable when exposed to the weather, and neither too hard to properly hold spikes, or too soft to resist crushing by the pressure on the rails. These qualities, Mr. Barney proves, are combined in the *Catalpa*; and his pamphlet, containing also many excellent cultural suggestions, is a welcome addition to the arboricultural literature of the day, and should be circulated among all who interest themselves in our forest economy, and the railroads of the far West."

One Grape Vine.

FIRST ARTICLE.

We can not conceive of a place, unless in a tenement house in a crowded city, where one can live, and not have room for at least one grape vine. Most of those who live in villages, have room for several vines, and those who live on farms have room for all the vines they care to plant. Several years ago we had occasion to call upon a distinguished general of the U. S. Army, who was stationed in New York City. Our business over, he took us into his back yard, probably 25 by 50 feet. We found along the fences some 8 or 10 grape vines, all properly labeled. We asked for how long he had taken the house. He informed us, for a year, but was liable to be ordered off at any time. We remarked that he could get no returns from his vines until the next year. He replied that he was well aware of that, but he made it a rule, wherever he went, to plant vines, for, he said, "somebody will get the fruit from them." We had heard of this officer's heroism when on the staff of Gen. Scott, in the Mexican war, but this remark, "somebody will get the fruit from them," showed him to be a good as well as a great man. "Why do people have so few grapes?" is a question that has often puzzled us. Go over the country, and we find the farms that have an abundance of grapes are few, while those who have none are in the majority. Those who live in towns and villages, with



LEAF OF BEGONIA WITH YOUNG PLANTS STARTING FROM IT.

which *Begonia Rex* is the type. *Begonia Rex*, and its varieties, are among the most showy of greenhouse plants, as their foliage presents a great variety of color, and they are much used for greenhouse and conservatory decoration. Their leaves are large, and have very strong veins. To propa-

but a few feet of land, will have grapes in abundance, while those who have 50 or 100 acres, or more, are without this welcome fruit. Why is this? It certainly can not be the cost, for 25c. to 50c. is the average price of vines. We think it is from some feeling that vines are difficult to manage, that there is some "mystery" about pruning that they cannot master, that prevents the general planting of vines. Now we advise every one who has the land—and if that is but 10 feet square, it will hold several vines—every farmer, who would provide his family with this most acceptable fruit, and, we may add, would increase the attractions of home, to plant out grape vines. It must be a strange farm that can not find a place for them, as we have over 50 vines in a space 200×100 feet, and all in full bearing. There is nothing about the vine, its training and pruning, that any one can not understand. We head this article "One Grape Vine," because what may be done with one vine, may be done with five, or fifty, or more. The first question will be,

What Kind Shall I Plant?

As a general thing, if one knows nothing about vines, and is to put out but one, we say plant a "Concord." But we do not advise any one who has the room, to restrict himself to one, so we add as a list to choose from, Delaware, Creveling, Hartford Prolific, Barry, Wilder, Brighton, and Eumelan.



Fig. 1.—VINE AS RECEIVED.

These are all good, as family grapes, though not equally good market sorts, and are generally successful. Now, when you order a vine from a nursery,

What do you Get?

If the nurseryman understands his business, you will get—not a big vine—but a copious root, with a stem having, perhaps, three or four buds upon it. When you get the vine or vines, make the soil mellow—never mind manure now—open a broad hole, spread the roots, and cover them about 4 inches deep. But, before setting the vine, put down a stake, about 6 feet high, and plant the vine with the stem close to the stake. Spread the roots well, have them covered with the best of the top-soil,

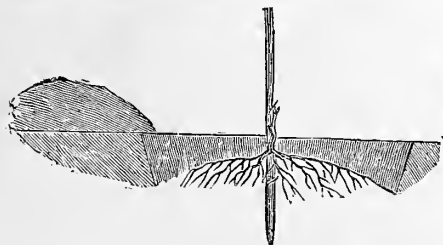


Fig. 2.—PLANTING THE VINE.

and when covered, press down firmly with the foot. Now, what have you got? You have the roots well planted, and a dead-looking stem, with 3' or 4 bunches along it, as in figure 1. These bunches on the stem are buds, and the growth of the vine will start from them. Watch them well. You will find, perhaps, that the uppermost swells and breaks first, then the next below will break, and after that the others. The first thing to do is to rub off all but the two best and strongest of the buds, and when the uppermost, or the next below it, has made a shoot long enough to tie to the stake, tie that to the stake with a piece of soft cotton twine, bass matting, or whatever will hold it without cutting. And then break off the other shoot—you will hate to do it, as

it looks so promising, but the only way to start right, is to grow but one shoot the first year, and to keep that tied up to a stake as it grows. Certainly there is nothing difficult about this, and whoever does it, with one vine, or one hundred, will have made a fair start. Let the vine grow, keeping it tied up, and later, we will tell what to do with it.

Where to Plant Vines.

Anywhere, where there is six square feet of soil. They may be trained to special trellises, and this is necessary where there are many, but a vine may be trained to a fence, to the side of a shed, or a barn, or to the dwelling house. Once understand the manner of the growth of the vine, and it may be put almost anywhere.—How the vine grows, we shall try to show in other articles. In this we insist upon planting, at least *one vine*, but hope that those who have the room will plant many more, and we also insist that the vine shall be treated properly, and be allowed to form but a *single shoot* the first year. An old vine with several feet of stem and little root is not worth planting by any one.

About Irrigating our Gardens.

The sight of the wonders wrought by irrigation in Colorado and California, some years ago, stimulated me to try the experiment, on a small scale in a new garden, for the last two seasons. I came into possession of an old gravel pit, upon a side hill, covering about three-fourths of an acre. The soil in the highest part of the lot had been removed to the depth of twenty feet or more, some twenty years ago, for the purpose of making wharves in the village. Nothing was left but hard-pan and gravel. In the bank a spring had been struck, where the water oozed a little, all summer, and run a small stream during the winter. The surface soil below had never been planted, and bore nothing but coarse grasses and weeds. A part of it was deep mire in winter, and not dry enough to plow in spring until late in May. A more unpromising piece of land for a garden could hardly be found. Tiles were laid to the depth of three feet, completely removing the surface water, and making early plowing practicable. Being without stable manure at the time, I used coarse sea-weed to turn under and loosen the soil, and applied a compost of fish-scrap and soil, in the hill. The yield of corn, potatoes, cabbages, and turnips, was much better than could have been expected. The soil improved every year, and the crops grew better. Two years ago I thought of turning the spring to practical account for irrigation. It had been previously cleaned out and deepened, and a pool about ten ft. square had been walled in, to furnish a small pond for ducks, and also to convey water to the hen-house. The waste-water, which would not more than fill a half inch pipe in summer, ran off into the tile-drains and benefited no one. On the driest part of the gravel bank below, squashes and melons were planted. A few troughs of hemlock slats were made, and the water was put on to the melon-patch early in July. After the vines were well started, the stream was kept in one place for a day or two, until the ground was thoroughly soaked, and then changed to other hills, until the whole patch had been irrigated. Although the soil was poor, and the only manure was that in the hill, the growth of vines was luxuriant, and there was a very fine crop of nutmeg and water-melons. Owing to the depredations of the bugs, the squashes did not succeed so well. Last summer the experiment was repeated with still better success. In hill-countries, like many parts of New England, there are thousands of places, where gardens and fields can be irrigated from surface streams, at very small cost, and thousands more, where wells and wind-mill pumps would make water available for the garden. We may safely calculate upon doubling our crops by the timely supply of water through the growing season. It would be a complete safeguard against drouth, and would be helpful every season. Water enables the plant to make the best use of the manure given it, and to get large supplies of food from the soil.

CONNECTICUT.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

BY FAITH ROCHESTER.

After the Kindergarten.

Some good soul—a reader of this journal, I fancy—has sent me a few numbers of the new "Primary Teacher." In the second number is an article by Mrs. Hopkins, giving an account of one year of her teaching in a city of Massachusetts. I read this article with the greatest delight, and have re-read it about a dozen times. I want to copy every word of it here, but of course that would never do. Besides, I have become aware that this very article awakened quite varied sentiments in different readers. Colonel Higginson sent it to the "Women's Journal," recommending its perusal to teachers and mothers. This has called out some responses from teachers, who express themselves shocked by the amount of learning accomplished by Mrs. Hopkins' pupils. Let me see if I can tell briefly some of the work done in her little private school of girls from eight to fourteen years of age. The only previous education of the younger ones had been a good Kindergarten. They got quite a clear vision of the course of events in this country for 200 years past, from Higginson's "Young Folks' History," went through Dickens' "Child's History of England," and had the prominent points of Greek and Roman Mythology from reading "The Age of Fable." They reviewed Miss Hall's "Primary Geography," which had been read to them in the Kindergarten, then took the higher geography and went nearly through the geography of the United States. After some language lessons, they found to their joy that they knew grammar already, so they left that to take care of itself, and went on to dictation exercises and composition. Reading and spelling they learned by having constant exercises in one way or other.

It was found necessary to restrain their excitement, somewhat, in the mental exercises of arithmetic, though they had frequent exercises, and became very quick and skillful in rapid calculation. They studied the fundamental rules, applying numeration to fractions, decimals, U. S. money, compound numbers, the metric system, etc. All these were treated as varied applications of the simple rules of numeration, addition, and subtraction.

They learned also from Prof. Gray's "How Plants Grow," and Miss Youman's little Botany, (at least they learned on her plan), analyzing flowers readily, and enjoying much of the higher and more delightful developments of botany. They studied the forest trees by walks in the woods, and reference to Mr. Emerson's book. They learned what Morse could tell them in his "First Book of Zoology," Mrs. Agassiz, in her little "Sea-shore Book," and read together other books on land snails, butterflies, and other insects. They learned from books and pictures about our native birds. They had a teacher for drawing, and a French woman to talk French with them, learning by heart a few fables, and playing a French game with their teacher. They studied German in much the same way, reading at last with delight "Grimm's Tales" in German.

All this was done in one school year by children averaging ten years of age, though some had entered their teens. There was no constraint, no emulation, no rule of morals or manners, except such as they saw to be the necessary conditions of attentive study and good manners. Mrs. Hopkins hoped in the following year to advance her pupils as much in love of study, desire to learn, development of their faculties, and attainment of knowledge, as she felt had been done in the past year.

What is Said on the other Side.

Those who criticize this article protest against such "pouring into" the minds of children, suggesting how difficult it is to battle with the natural tendency of such children to distraction and thought-wandering. They forget that the younger ones of Mrs. H.'s class were trained in a Kinder-

garten, and as she says, "of course they were wide-awake and fresh for study." I know myself the difference between reading aloud in the family to children who are accustomed to pay attention, who delight in the reading selected for them, and to children who are not accustomed to such experience, and who distract others and look about for something to play with while I read. The work accomplished in Mrs. H.'s school, could not be done in a public school, unless the children had been previously trained in a Kindergarten.

Education at Home.

This report of what Mrs. Hopkins had accomplished pleased me, it came like good tidings from the future. I had seen one ten-year-old boy get what seemed to me "quite a clear vision of the course of leading events in our country during the last two hundred years," without any "memorizing" and with only one careful, though often interrupted, reading of the "Young Folks' History of the United States," read aloud by myself. I had seen the same child's delight at the age of five, in Mrs. Agassiz's "First Lesson in Natural History," and a year later, had seen how fast he gained a knowledge of physiology from my reading aloud a little at a time, that capital book, "History of a Mouthful of Bread." I had seen how he picked up for himself, without book or single teacher, the names of all the forest and ornamental trees he came across. Then I know, too, how the Swede and German children, among whom I have lived in the West, learn to speak two languages, quite correctly, when very young. More than all this, I have seen how almost all children are starved and stunted mentally, because we parents are too ignorant or too busy with other things to give them answers to their questions, and to surround them with conditions favorable to healthy mental growth.

Mental Strain.

But there is another side. I would not leave this subject of education here without an earnest word of warning against overtaxing the minds of children. Mental strain is like any other strain—of the back, or of the eyes, for instance. It may be slight, and excite little attention, or so severe as to get the name of "arrested development," or result in idiocy. I have known of children, who were wonders in their ability to learn and recite little verses, and in learning the alphabet, who suddenly came to a stand-still—hated all lessons, and afterwards learned with great difficulty. One little girl, who had been through an experience some like that, told me, when a dozen years old, that she didn't know why, but she could not put her mind fully upon anything. It would always wander in spite of her efforts to pay attention. Rest is the cure for a strain; rest for the mind when the mind is weary, and a long rest with a change to out-door amusement, when the mind has been seriously overtaxed.

Unbleached Window Shades.

Mary has been keeping house so short a time that she has no old "duds" to work over into cheap curtains. I don't know as she can do better than to take unbleached factory cloth. She can make drapery curtains of this if she likes, but if, like me, she wants to see out, and let the light in during the day, she will prefer shades. If her cloth is too wide for the window, she can make a broad hem each side. Then she may trim it with a narrow strip of some bright color—cheap worsted dress binding is most easily managed, though plain calico that will not fade may be used. The shades may be tied up by cords and tassels of the same color. If worsted dress-braid is used, the same will do for a cord, allowing enough in length for a generous bow when the shade is rolled up. Lambrequins of the same color in calico, flannel, or any material, of any pretty style, (the pattern books usually give them, or give an idea how one can make them without a pattern), give a pretty finish to the whole.

Rice and Tapioca Pudding.

In a pint of water, soak over night half a teacupful of rice and half a teacupful of tapioca. In the morning, add to this, cinnamon, or other flavoring; half, or three-fourths a teacupful of raisins; three-

fourths a cupful of sugar, and a quart of milk—a little more milk (or water) if you put in the raisins. Mix well, bake two hours, and eat cold.

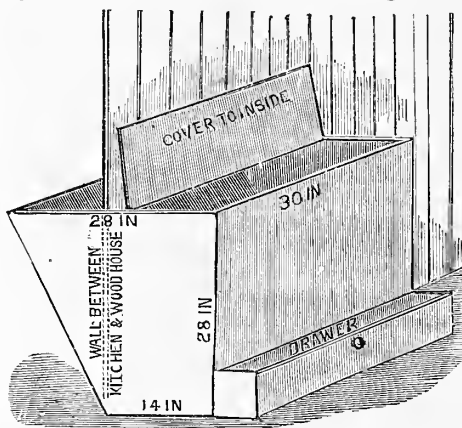
This is a good pudding to make when eggs are scarce, or dear. I have found, too, that the milk used may be diluted nearly one-half, as milk grows scarce, by adding a teaspoonful of butter. But eggs are beginning to be plenty, as I write, and when this reaches my readers they will be at their cheapest and best. So here is a good recipe for

Tapioca Pudding with Eggs.

Soak one teacupful of tapioca in a pint of water for two hours or more. Add one quart of milk, and set it where it will heat gradually, without burning, stirring it occasionally until it seems quite soft. Set it where it will cool a little, while you beat well together the yolks of five eggs, one tablespoonful of butter, and half a teacupful of sugar. Stir this with the milk and tapioca, then add the beaten whites. Bake in a buttered dish. It is not necessary to soak tapioca before making into a pudding, if you heat it gradually in milk or water, stirring as it swells and softens—all this before you mix it with the other ingredients of the pudding.

Another Wood-Box.

In February last, we gave a rather elaborate design for a wood-box, and several others will be found in former volumes. In those places where wood is the fuel, it is found to be bulky, and to bring in that dread of the neat housekeeper—*dirt*. Hence some device for holding the wood, is necessary. We have, in former volumes, given neat wood-holders, for use in the sitting-room. We now give one for the kitchen, where the demand is constant, and should be supplied in the most convenient manner. Our correspondent, "H. T. S.," Wayne, N. Y., sends a device which will be useful where, as is often the case in country houses, the wood-house immediately joins the kitchen—a most convenient arrangement. His wood-box, as he says, "is only adapted to those dwellings where



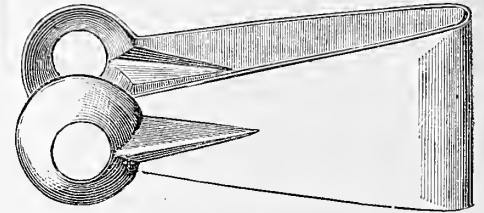
WOOD BOX IN PARTITION.

the wood-house is next to the kitchen," as it should be where wood is the fuel. As shown by the engraving, the partition wall between the kitchen and wood-house is cut away, to allow the box to be supplied from the wood-house, and to deliver it where it is to be used—in the kitchen. As our correspondent says, "this will save many steps, and avoid much litter," two things every farmer's wife—indeed any other wife—will appreciate. The engraving sufficiently explains itself. The partition is shown with the parts of the box on each side, and the measurements of the box are given. The drawer at the lower part is for kindlings, and any of the stove appliances not in constant use.

A Strawberry Huller.

Where strawberries grow with a distinct neck, the operation of hulling is easy, and no aid is required to the fingers of the operator. But many varieties, especially those that produce very large berries, have the hull (or properly speaking, *calyx*), so closely attached to the fruit, that it is trouble-

some to remove it by the use of the finger and thumb, and when, as is often the case with the large berries, they grow in the "cockscomb" shape, the calyx is so malformed, and partly covered by the shoulders of the fruit, that it is impossible to remove it neatly without using a knife. We have seen two or three devices for hulling strawberries, but none so simple and practical, as that made by A. S. Buiker, of Lawrence, Mass. It consists of a pair of forceps, or tweezers, of the form shown in the engraving; they are apparently of brass, and silver-plated. Mr. B. sent us his huller too late



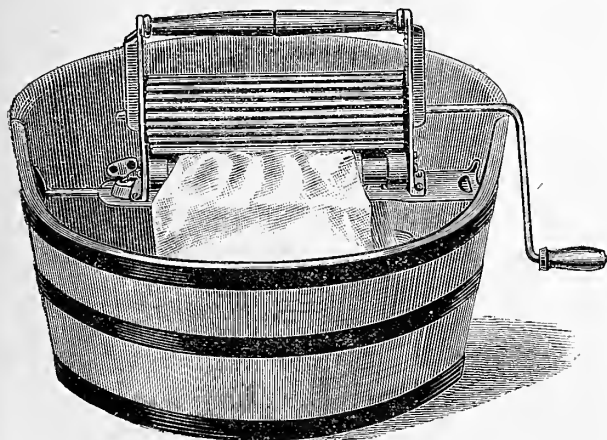
BUNKER'S STRAWBERRY HULLER.

last season for us to notice it then, and we now call attention to it well in advance of "strawberry time," at least in the Northern States, as an exceedingly useful little affair. As we preach for an abundance of fruit for others, we try to practice it for ourselves, and as in the season, strawberries are served usually three times a day, we had a fair chance to test the utility of this huller. Like most useful affairs, it is very simple, and its peculiar form allows it not only to save the fingers where the hulls present no especial difficulty, but with troublesome and cockscombed berries, it allows the calyx to be cut out neatly and quickly and leave the berry in a presentable condition.

Washing and Washing Machines.

Whatever may be the liquid used in washing, whether it be hot soap-suds, cold river water, with the "soap-root" of the Mexicans, or some of the various washing compounds, the mechanical operation is essentially the same. The Mexican woman souces your shirt in the river, lays it on a flat stone, and pounds it vigorously with another stone, regardless of buttons; others use a board and a stick; others put the clothes into a barrel and pound away at them with a heavy pounder. These primitive washing machines act upon the same principle, as do the more simple methods of rubbing the fabrics between the knuckles, or rubbing them upon a wash-board. In each and all of these, the pores of the fabric are filled with the water or suds, which is more or less violently squeezed out again, carrying with it the various soiling matters known by the comprehensive term *dirt*. We fill the clothes with all the water they will hold, and squeeze, rub, or pound it out again, and repeat this again and again, until the soiling matters are either dissolved out or are carried off mechanically by the liquid. The number of machines that have been contrived to perform this simple operation, and take the place of the knuckles, whether used against one another, or against the grooved washing-board, is beyond computation, some of them being ponderous and complicated, others almost as simple as the old pounding barrel, but in each the object is to fill the fabrics with suds and squeeze it out again, and those are most effective that most closely imitate the rubbing upon the wash-board. Hundreds of machines have been invented, but there is not one that may be said to have come into anything like general use. This is not from any fault in the machines themselves, for some of them are very effective, but from a strange perversity on the part of the very people whose labors they are intended to lighten—the working women, or "help." The average kitchen-maid, if she displays no tact or ingenuity in anything else, shows a wonderful ability in preventing a washing-machine from working, and the mistress, for the sake of peace and clean clothing, allows the servant to do the washing by "main strength and stupidity."

Hence it rarely happens that these machiues are used, except by those housekeepers who do their own work. A machine of any kind requires a certain amount of intelligence for its effective use, and this applies to washing-machines as well as steam-engines. The domestic labor-saving machine that, of all others, has been most generally accepted by the maid-servants, is the wringer; the utility of this was so manifest, and the contrast between turning a crank with ease, and wrenching the muscles of the arms and upper part of the body generally, in twisting the water out of a large sheet, so great, that in most cases prejudice gave way, and the wringer tolerated. Perhaps its resemblance to a wringer is one reason why the "Walker Washer" has so rapidly become popular, and has been used by those who could see no merit in machines of other styles. This washer, of which an engraving is given, is easily attached to any tub, whether square or round; a couple of sockets are screwed



THE WALKER WASHER.

to the sides of the tub, on the inside, and the machine can be put in place or taken out, in an instant, to allow the tub to be used for other purposes. The base of the washer is so arranged, by means of a sliding rod and set screw, that it will fit a tub of any size; this is shown in the engraving, a portion of the tub being cut away to allow the whole of the machine to be seen. The general construction of the washer is much like that of a wringer; the upper roller is of wood, and fluted; this is, by means of springs, pressed closely against the lower rolls, of which there are two, also of wood, and provided with broad rubber rings set about an inch apart. The clothes are soaped on the most soiled parts, and made up in convenient parcels; thus several small articles are laid inside of a larger one. The tub being furnished with *hot suds*, the clothes are passed between the large roller and the two smaller ones, back and forth, for a few minutes, the time being governed by the character of the articles. Here we have the principle already spoken of: the fabrics are filled with hot suds, this is firmly pressed out of them by the rollers, and they pass on the other side into suds again, and by the reverse motion this is again squeezed out, and so on alternately and rapidly, with the effect of removing the foreign matter, and little wear of the clothes. This being the structure and action of the washer, we have only to add that the writer has tried it for some time, and finds it to work in an eminently satisfactory manner. It is simple, easily worked, and moderate in price. This machine is manufactured by the Erie Washer Co., Erie, Pa., who give other particulars in our advertising columns.

Sensible Advice about Eggs, comes from a friend, "J.," Hartford, Conn., whose approach to the age of 80, shows that he has paid proper attention to his diet. He says: "I suppose it is generally admitted, that the best way to cook eggs, so far as health is concerned, is to boil them *soft*, say three minutes. If they are boiled three minutes, the white will be cooked *hard*, and the yolk will not be cooked at all. This way, therefore, does not allow us to cook eggs so as best to

promote health. Eggs should not be boiled at all; they should be "coddled" and perfectly soft when cooked.

How to Coddle Eggs.—Put the eggs into a vessel of water at a temperature of one hundred and seventy (170°) degrees Fab., and keep the water at that temperature from ten to fifteen minutes, when the eggs may be taken out, and the white will be a fine jelly, and the yolk will be cooked soft. The temperature should be tested by a thermometer, not *guessed at*. The quantity of water should be so large, that the introduction of the eggs will not materially reduce the temperature.

The Tin Pan Nuisance.

BY M. W. F., BRYN MAWR, NEAR PHILADELPHIA, PA.

"If I were Duke of this country," began Anaximander one evening, as we were enjoying our daily drive through a section of country of unusual elegance, "I would punish with banishment every man or woman who threw tin trumpery into the street."—"Ameu," said I, "and send them out of the country with a string of oyster cans for a necklace."—His remark was born of no new spectacle—we had seen the like a hundred times before—but in this instance it was especially aggravating. There was a large country-house on a noble eminence—a beautiful lawn extending in front to a fashionable avenue, and at one side to a public road, not fashionable, but greatly traveled, and in a small ravine that made a gap under the fence and opened into the roadside gutter, was tumbled a mélange of old tin-ware—coffee and tea-pots, pans, cups, watering pots, innumerable fruit and vegetable cans, and broken crockery. It was such an

ugly blotch on the otherwise fair beauty of the place, that one could not but wonder at the sight. What to do with such old trumpery, that cannot be burnt, seems to be an unsolved riddle with the majority of country people. In cities, the house-maid stuffs it in a barrel, which the ash and garbage-men carry away. In the country, it is commonly pitched into some out of the way place, under porch floors, into vacant cellars, under currant bushes, etc., but always where in some moment it is discovered, and is as unsightly to the eye of the lover of nature, as would be an eruption on a fair woman's face to a lover of the human race.

So far as my own experience goes, I know of no better way to dispose of broken and worn out wares, than to put them into a well dug for the purpose—one which has a cover, and which, when full, can be earthed and grassed over. Such a receptacle has its advantages—one always knows where to look for old basins and pans, if they are needed, for broken pottery when pieces are required for drainage, while bits of glass are thus put forever out of the way of the children's feet. If any body knows of a better way, let him make his method known in these columns, from philanthropic motives.

I must think, too, that the sight of old tin "lying around loose," has a charm for some people, judging from the way they distribute it in their backyards and front ditches. A man's back-yard is his private property, and if he chooses to make and to keep it a bideous looking place, it is an affair between himself and his conscience; but the man who makes a public highway the receptacle of his trumpery, should be prosecuted by the Commissioner of Roads, or some other apostle of public weal and public decency, and punished as a polluter of public morals. To be brought face to face with such unsightliness, is like an "evil communication" which corrupts good manners. There is a manifest indelicacy, as well, in allowing such broken and worn out domestic utensils to remain exposed to public view, and belongs to the same strain of untidiness and vulgarity that throws old shoes and crinoline in the street. So we advise, that every farm-house have its well or pit for unsalable and

unburnable trumpery, and thus bury so much of ugliness from the face of the earth.

BOYS & GIRLS' COLUMNS.

Aunt Sue's Chats.

AN INTERESTING GAME.—WORD MAKING.

S. F. BENNETT.—The most fascinating "game" that I have seen for a long time, is played with letters, and is called "word making;" or, if you prefer a more classical name, "Logomachy." Provide yourself with a box of letters. These may be had at the book and stationery stores, and contain several alphabets, each letter upon a separate small card. Any number of persons can play, but it is most enjoyable with three or four. To begin the game, let one person draw one letter from the box without looking at it; he places it right side up upon the table, in front of him; if it be A, O, or I, he can keep it as a *word*. The next person draws (say) Y, and not being able to make a word of it with the O (face up) by the first player, he places it in the pool on the center of the table. Number 3 draws (say) R, takes No. 1's O, and makes "OR." No. 4 draws E. He might then take the Y from the pool, and make "YE," but he prefers to take No. 3's "OR," and make "ORE." No. 1 draws again, (we are supposing that four persons are playing), and draws the letter B; he takes Y from the pool, and makes "BY." The words made, are placed in front of those making them, face up upon the table, and kept there until some one, by adding one or more letters, to form another word, takes one from its previous possessor. Who ever first gets ten words, wins the game, provided all the other players have played without being able to deprive him of one of the ten.

To make it plainer, let's use a diagram, and suppose that four persons are playing. Before them on the table are the words seen in the diagram. No. 4 draws the letter U, looks round the table to see what he can do with it, as it is generally preferable to take a word from some one of the other players, rather than to make a new word from the pool. He might make "BUD" by drawing from the pool, but he prefers to take No. 2's "HOG," and by adding to it the U, just drawn, and the C from the pool, he can make "COUGH;" then he takes the D from the pool, and adds it to his own "OFF," making "DOFF," and laughs at No. 3 for not having seen it. No. 1 then laughs at No. 4, the latter having finished, for not taking his "BE," adding the B from the pool, and making "EBB," which he proceeds to do himself before he uses the E that he has just drawn. With that he might make "FEZ" with the F and Z from the pool, but he prefers to take No. 2's "FROG" and make "FORGE" with it.

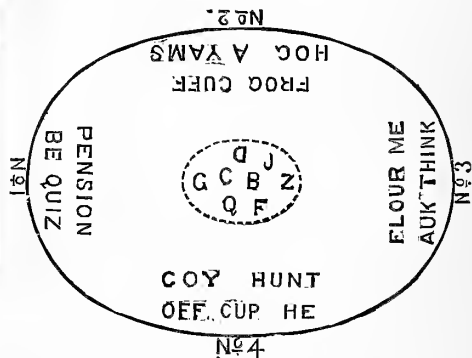


DIAGRAM OF WORD-MAKING GAME.

The foregoing illustration will show you that you can make a word at any time before drawing, if you happen to see a letter in the pool that you can weave into a word of your own, or some one else's. The right to use the letter drawn from the box, is not forfeited by forming a word from the pool. No *part* of a word can be taken from any player; the whole word must be taken, or none. You can not take one word from a player, and add it to a whole word of your own by merely adding a letter or two. For instance, if No. 1 has A, and No. 2 has I, No. 3 can not take the two, article and pronoun, by merely adding a D to them, ("AID"); if they were merely letters in the pool he could do so, or if No. 1 had A, and I were in the pool, then No. 3 could take the A for his "AID."

No word can be taken by simply changing it from a singular to a plural noun. If No. 1 had MITE, you could not make it MITES, and take it, but you could appropriate it by *transposing* it into "TIMES," or "ITEMS;" somebody's S could turn that again into SMITES. You may add an S when you turn a noun into a verb, *e. g.*—DANCE, DANCES; JUMP, JUMPS; CUFF, CUFFS; etc. You may add an S to pluralize one of your own nouns at any time. Proper names, geographical names, or foreign words, are not allowed. The dictionary must decide a question when the players are in doubt.

Before beginning the game, it is well to discuss the

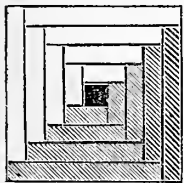
rules and regulations with regard to plurals, obsolete words, etc., so that the players may be all of one mind. The game may be varied by making it sometimes entirely geographical or historical; another time it may be based upon authors or Bible names. In your anxiety to get your ten words, you will study your dictionary, and learn many a new word; and some of you will perhaps be surprised to find that there are such words as *morra*, *moresh*, *nider*, *nide*, *ait*, *brash*, *alb*, *abnet*, *toggle*, etc.

After the player has finished making all possible combinations, it saves time to draw the letter for his next turn, that he may be considering to what words he can add it. He can keep it hidden until his turn comes to play. It is well to put a watch upon the table, and decide before commencing the game that three minutes will be allowed to each person for consideration. If no word is taken from the party having ten words, before three minutes are up, the game is finished. If the player draws J, V, K, W, X, Z, or Q, or all of these letters, he has the privilege of drawing again, even though he has been able to add any of them to the others' words, or to letters in the pool. I should be pleased to get a postal card from any who try this game, and enjoy it.

"C. E. L."—The "Square" puzzle you send, was published in the *American Agriculturist* in October, 1877.

"J. K."—You will need four ounces of chinchilla worsted (single zephyr) for the "scarf," and three ounces of scarlet. One ounce of the latter is for the fringe. Set up 30 stitches on small wooden knitting needles. The "sontag-stitch" is a very pretty one for the purpose. The advantage of this stitch is, that there is no "right or wrong" side. In case you are not familiar with the stitch, I can make you acquainted with it in a very few words: "Slip one, thread over, knit two together." Knit ten rows of chinchilla, then half an ounce of scarlet, then ten more of chinchilla, and half an ounce of scarlet, (being careful to join your thread at the commencement of a row, never in the middle). Now knit the remainder of your chinchilla worsted, all but enough for the twenty rows beyond the scarlet stripes at the other end. Tie in your fringe. *Ribbed* scarfs are also pretty, ("two plain and two purled").

E. B. M. D. asks for "directions how to piece 'Log-cabin' quilts, and also how to net ties, etc. I wish to net a bed-spread with white cotton."—I would not undertake to tell you *how* to net, for I know I should "get all tied up in a hard-knot" myself, if I should attempt it. I would recommend you to get a book which gives "instruction in knitting, netting, and crochet work." I can, however, help you to the "Log-cabin" pattern, one block of which is shown in the figure. Begin with a piece of silk, one



inch square, for the center piece; then provide four pieces 1 by 2 inches, four pieces 1 by 3, four pieces 1 by 4, and four pieces more 1 by 5 inches. Let half of them be of dark, and half of light silk, and arrange them as seen in the pattern. When your blocks are all completed, you can join them together—being careful to keep the dark shades all running the same way—or you can separate them by strips, three or four inches wide, of black silk. It adds very much to the effectiveness, to make the center square (of each block) of black velvet.

Our Young Microscopists' Club.

I invited you, and you have come. Such a lot! Well, I am glad to have you tell me what you are doing, but you must not expect me to notice you all in these talks. I can only find space to notice those who wish their questions answered, and who tell something of use to the rest. One Minnesota boy, to whom a relative gave a \$50 Microscope, wishes one of our instruments in order that he may belong to our "Club."... I was reading the other day, in a large work, about the Microscope, and came across something that I thought would interest you. The author stated that many of the figures given of the minute objects seen by the costly and powerful Microscopes, were not true, that they were due to what is called

OPTICAL ILLUSION;

that is, the impression upon the mind is a false one, and we do not always see things as they really are. He illustrated this by a series of round black spots, placed equally distant from one another and separated by a white space, as in figure 1. If you hold this about 18 inches from the eye, although you know the spots to be circles, if you look at them steadily, they will appear to be hexagons, or six-sided spots. I introduce

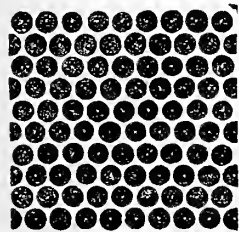


Fig. 1. DECEPTIVE SPOTS.

can not always trust our eyes, but must look at all the things that we examine with the Microscope, very carefully and in various ways, looking at them as both opaque and as transparent objects. Several have, from time to time, asked me about a swift moving, silvery looking little creature, now and then found in drawers, and among books that have not been disturbed for some time. Some call it

"THE SILVER-FISH,"

as it has a fish-like shape and a silvery color; in England it is known as the "Sugar-Louse." It is about one-third of an inch long, and of the shape shown in figure 2. It is really an insect, and belongs in that class of insects that have no wings, with the lice, ticks, mites, and others. Its scientific name is *Lepisma saccharina*. Its first or

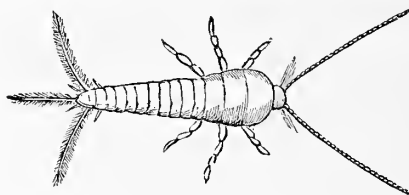


Fig. 2.—LEPISMA, OR "SUGAR-LOUSE."

generic name, *Lepisma*, is from a Greek word, meaning "to scale off," probably because its scales come off so easily, and its second, or specific name, *saccharina*, refers to its fondness for sugar. It is said to be very fond of sweetmeats of all kinds, and is charged with eating silks, and with injuring books, though some say that it is only found among books, because it is after the mites which do the mischief. However, I have never seen them numerous enough to do much injury. When you catch one, you will find that, by a touch, this silvery dust with which it is covered, will come off upon your finger; transfer some of this to a glass slide and examine it, you will find that each minute particle of that which seems like dust

IS A BEAUTIFUL SCALE,

and presents the appearance of figure 3. Though a small object for your Microscope, you can make out the form of the scales; some are long and fan-shaped, and others circular. You may be able to see the lengthwise lines if you are careful. This is one of the objects used to test the powerful Microscopes; an instrument of sufficient power will show not only the lengthwise lines, but cross markings. The scales on the

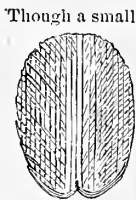


Fig. 3. SCALE.

WINGS OF BUTTERFLIES AND MOTHS

are much larger than these, and you will find them very interesting objects. Something is said about these on the circular that goes with the Microscope, and now that these insects will soon be about, you must be on the look out for them. Not only the scales of insects, but

THE SCALES OF SMALL FISHES.

will be found worth looking at as opaque and transparent objects. That you may see what pretty objects the scales are, I procured a few from such common fishes as happened to be in the market, that you may see how they look when magnified with our Microscope. Figure 4 is from the Smelt, a pretty little fish not found a great ways from salt water. When magnified, each scale looks like a beautiful shield with its surface wrought in delicate lines. A much more common fish is the Pickerel, which, in the course of the season, most of you will be likely to come across. Its scale is shown in figure 5. The notched



Fig. 4.—SMELT.



Fig. 5.—PICKEREL.

edge is where it is attached to the skin. Still more common is the Yellow Perch, found in almost every fresh water stream or pond in the country, and though so common, its scale (fig. 6) is one of the most interesting. Here you have some very distinct teeth or notches, and the opposite edge, the exposed part—or as carpenters say about shingles, the part "to the weather,"—appears quite different from the other; it is finely marked with lines, and at the very edge you will be able to see a very minute little fringe of points. These will serve as examples, but you will come across a great many other fishes, and no matter if they are said to have no scales—for many fishes pass for scaleless, because the scales are very small and hidden by the skin—examine the skin with your glass. When you come across an interesting scale, it is well to preserve a little lot, to have some to exchange with your friends. Scrape them off gently with

a knife, and place them in a saucer, or other small dish of water. Stir them about gently with the finger, and when they settle, pour off the water; repeat the washing several times, or until they seem to be free from all slime; then place them on a paper—newspaper is better than glazed writing paper—fold it over, and put it under a hook, or other weight, to dry. When dry, you can put them up in a fold of nice paper, and label them. In examining the scales you will often find a number stuck together, in which case you must pick them apart with your needles. You must look at them both as opaque and as transparent objects, and by carefully managing the light, you may find that it is not well to have too strong a light to see them best.

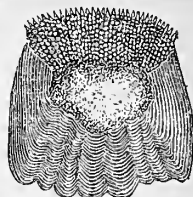


Fig. 6.—PERCH.

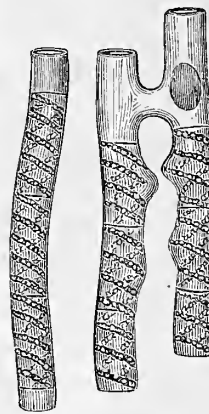
AS TO MOUNTING SCALES.

I am not quite ready to tell you about this, for I wish to try some experiments, to hit upon the way that will be easiest and the cheapest for you. They will keep perfectly well until you are ready to mount them.

In the pools of water found almost everywhere, especially in spring, even if they dry up later in the summer months, you will, if not this month, next month or later, find on the surface an abundance of

GREEN SCUM, OR "BROOK-SILK,"

as it is often called. If you take up a bit of it, you will find it is made up of fine threads, as fine as, or finer than, the fibres of silk. You will often find this of interest to examine with your Microscope. These threads are really plants, and belong to the great family of *Alga*, of which the seaweeds form so large a part. These *Alga* are flowerless plants, that is, have no regular flowers and seeds, as do the plants we are most familiar with, and they are often very simple, consisting of just a minute little cell, or sac—just a microscopic bag—without root, stem, or leaves, and yet be a complete plant, which is multiplied by breaking up into other little bags like itself. But our Brook-silk is not so simple as this; it consists of longish cells or bags, placed end to end, as in figure 7. There are many kinds to be found in our waters, and you may not all find what I am about to describe.



7. BROOK-SILK. 8.

The threads of some of the Brook-silks, when magnified, appear as in figure 7, transparent long cells, with green matter inside, and this is often arranged in spiral regular coils. The whole mass as it floats on the water is like

A BRIGHT GREEN SCUM.

Later in the season, you will find this scum looking dull, and much of its green color faded. Examine it from time to time, and you may be fortunate enough to catch it at the right time to see its curious manner of multiplying. Several of these plants behave in the manner shown in figure 8. In two threads laying side by side, the cells (or joints,) will bulge out towards one another; at length the projecting parts of the cells will meet, and grow together, the division between them will break away, and all the green matter in one, will run over into the other; the contents of the two cells thus joined will form an oval green mass, seen in the upper part of figure 8, which is called a *spore*, and answers to these plants the same purpose as seeds do to common plants. When the cell breaks up to allow this to escape, it will probably fall to the bottom and wait there until next spring to continue the growth. I do not expect that all of you will succeed in seeing this, but it is worth while to try.... Among the things to be looked for in the spring water pools is the

"REVOLVING GLOBE."—*Volvox Globator*.

I do not know how plenty it is every where, but when I lived in one of the Western States, I could hardly go amiss for it. Where there was a water-hole, a pint of water dipped up from it, would be very sure to contain several of these curious globes. It is just large enough to be seen by the naked eye, and if you get a jar of water from such pools, and can see a very tiny globe swimming around in it, you may be pretty sure that you have the *volvox*. But if your jar holds a quart, how are you to catch it? The microscopists have a very neat trick with

THE "DIPPING TUBE."

This is a glass tube of six inches or more in length, and about the diameter of a common lead pencil. Druggists generally keep glass tubes of various sizes, and will supply one for a small price. A tube of this kind is fre-

quently required to catch small objects that we wish to examine. Suppose we have a jar of water in which the *volvox* is seen traveling about. You take the tube in hand, with the forefinger pressed over its upper end, as shown in figure 9. So long as the upper end of the tube is kept closed, no water can enter the lower end. Now if you direct the lower end of the tube, keeping the finger closely pressed over the upper end, towards the *volvox* or other object which you wish to catch, even if no nearer to it than half an inch or more, and suddenly remove the finger from the upper end of the tube, the water will at once rush in to the tube, and carry with it the *volvox*. Now put the finger again over the upper end of the tube, and lift that from the water. It will hold the water, and whatever you have caught. Having your *volvox* in the tube, you wish to get it into the cell of your microscope. Here no description will help you, you must exercise

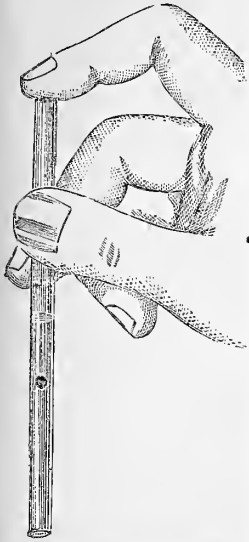


Fig. 9.—DIPPING TUBE.

tact. You have perfect control over the water in the tube; by letting the air in from above, by the slightest raising of the finger, the water will flow out at the lower end. I could show you in a minute how to get the *volvox* from the tube to the cell, though I can't readily describe it, but if you have any *gumption*, you will, if not at the first trial, succeed at the second attempt. Having the

REVOLVING GLOBE, OR VOLVOX,

in the cell, you will examine it, and a puzzling thing you will find it. A globular, greenish body that moves about, going around and around, in a most knowing manner; and you will say: "What a curious little animal." But it is not an animal at all; it is really a plant, or rather a collection of plants. You know that the plants you are most familiar with, are fast rooted in the ground, and do not move at all. But there are some water-plants that act so much like animals in their movements that they were for a long time considered as animals. The *volvox* is only one of these strange plants that move about in the water. As you look at it under the Microscope, having placed it in the cell, with a few drops of water, it will appear as in figure 10, a globe with green spots all over it, and it may be you can see the hairs on the surface, which, by their movements, make it sail about. I can now only tell you about this strange object, that it is

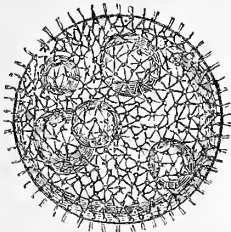


Fig. 10.—VOLVOX.

a colony of distinct individuals collected in a globe form. Each individual plant is a little green bag, with two hairs, as in figure 11, and many of these unite to make the globe, all with their hairs outward, and as these hairs are capable of rapid motion, they roll the whole along very curiously. Before I can tell you more about the *volvox*, I must examine some myself, to see how far our Microscope will show its history. As it is large enough to be seen by the naked eye, I know that it will be worth looking for, and that its movements, should you catch it, will afford you much amusement. I wish to suggest, as a great help to the Microscope,

A LITTLE AQUARIUM,

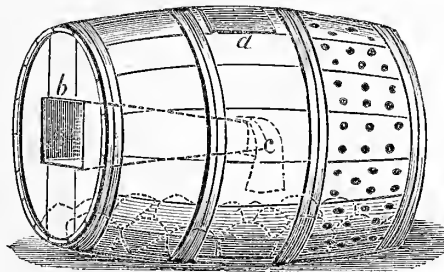
which may be any glass vessel, a common fruit jar, answering as well as anything. Into this you can put various water-plants, with water from a pool or pond, and you will find numerous things in the jar that you can catch with your dipping tubes to examine with the Microscope. Later in the season, when the *Duck weeds* appear on the surface of quiet waters, you must put a lot of them into your jar. These are curious little plants, shaped like flux-seed, but larger, that float upon the surface, with their roots hanging down in the water. The roots of these are the favorite resort of many curious microscopic animals, and will afford you a harvest of curious things. In the mean time put some clean gravel, an inch or so, in the bottom of your jar, and then put into it any delicate water-plants you come across. If they were rooted where you found them, tie a small stone to their roots and place them in the jar. Put in some snails, that you may watch their eggs, as mentioned last month,

FOR THIS MONTH,

besides what special things have been mentioned, you will need to look after the eggs of insects of various kinds, some of which are objects of great beauty. Insects, as a general thing, place their eggs, for safety, on the underside of a leaf, though some do not observe this precaution. Small flowers will now be abundant, and you will find that even the smallest, is an object of beauty when magnified. Leaves will now be plenty, and it will be well to examine all those that are rough or downy, as you will often find that the scales which give the roughness, and the hairs that make them downy, are beautiful objects under the Microscope. Of course I can not suggest every use you will find for the Microscope, and I have only tried to point out the most easily found, curious things, with a view to showing you how much is hidden from ordinary sight, and also to get you in the way of examining every thing that you meet in your daily walks and work. THE DOCTOR.

An Easily Made Eel-Pot.

Some time ago we told of some of the methods of catching eels; now "G. L." of Machias, Me., sends a description of an Eel-pot, as a trap for eels is called, which any boy can construct, and which will no doubt answer as well as any. A common flour harrel has many half inch holes bored all over it, and a piece about 8 in. square cut from one side for a door; the pieces cut out will make the cover, which may be put on with a leather hinge and a button to hold it fast. In one head (or both



AN EEL-POT MADE FROM A BARREL.

if you choose) put a spout, flush or even with the head on the outside, and projecting into the harrel about 10 inches. Upon the end of this, within the barrel, draw a leg of an old stocking, or a piece of one, to hang down over the end of the spout. Stones enough to sink it, are put into the barrel. Fasten a line to the trap, to the other end of which tie a stick of wood for a buoy, so that you can find it, and having put in the bait and made the cover fast, you are ready to sink it where eels are to be found. The engraving shows the arrangement; *a* is the door, *b* the spout, the dotted lines showing the part within the trap, with the stocking leg (*c*) over the end. This stocking leg is the ingenious part of the whole affair. An eel, attracted by the bait, will make its way into the spout and push through the stocking leg, which, as soon as it has passed through, will drop down and act like a valve to cover the entrance, and when once fairly in the trap, we don't think that the slipperiest of these most slippery fishes could ever find the way out. One correspondent charges us with publishing

"AN INJURIOUS SCANDAL"

about his favorite fish. We said of the bait to put into the pot, "no matter if somewhat old," as we had long ago learned from experienced fishermen. This gentleman (a correspondent of "Aunt Sue," who sends us the letter, (done with a "machine,")) says that the eel is very particular about its food, and if one wishes to catch him, he must use only "bait of the freshest and sweetest."

Aunt Sue's Puzzle-Box.

ALPHABETICAL QUERIES.

1. What letter, inverted, names a vegetable?
2. What two letters, right side up, name two other vegetables?
3. What letter names an insect?
4. What letter names a pronoun?
5. What three letters name three verbs?
6. What letter names a bird?
7. What letter names "the window of the soul"?
8. What letter gives an order to an animal?
9. What letter names a river?
10. What letter asks a question?
11. What letter is twice yourself?
12. What letter gives a hint?
13. What colored letter gives a geographical name?
14. What speckled letter can anticipate?
15. What foreign letter names a title?
16. What letter, with a piece of wood over it, names another title?
17. What letter names a measure?

JOHNNIE.

CHARADE.

"Breakers ahead"; the sailor cries,
From the tap'ring mast's high head.
"Bout ship," the watchful pilot's shout,
"On my first there's naught to dread."

My second both as first and last,
Enfolds most every land,
Whilst not a single bounding sea
But's limited by its hand.

My third, how welcome in the spring,
Companion of the tender lamb.
I'm one possession of the poor,
Which wealth may not command.

O'er my whole the youthful mother toils,
Her expectant babe t'adorn,
Again with care elaborates,
Her widow's grief to mourn.

Anon the lawyer me demands,
His brief and argument t'arrange,
Then I puzzle clerks and all
With figures curious and strange.

The printer too with fingers deft
Selects me from his case,
And in great form I'm daily spread,
T'enlighten every race.

With joyous youth I haste to school,
Till comes the glad vacation,
When high in air, I take my flight,
Sure sign of exultation.

J. A. B.

NUMERICAL ENIGMA.

I am composed of 77 letters:

- My 1, 61, 7, 35, 45, is a weapon.
- My 8, 21, 40, 72, 55, is a vegetable useful for its shell.
- My 10, 3, 52, 41, 69, is an animal whose fur is valuable.
- My 12, 24, 8, 36, 64, is a musical instrument.
- My 14, 2, 56, 46, 30, is a part of the body.
- My 16, 5, 25, 42, 51, is a bird.
- My 23, 33, 15, 63, 42, is a domestic animal.
- My 68, 53, 37, 16, 2, is ditto.
- My 47, 20, 8, 34, 4, is a wild animal.
- My 42, 1, 18, 73, 31, is the name of one of the gods.
- My 26, 76, 42, 6, 19, is ditto.
- My 58, 9, 56, 7, 61, is the name of a goddess.
- My 70, 15, 23, 49, 3, was the goddess of the family.
- My 77, 41, 66, 67, 59, is a very lazy animal.
- My 29, 44, 71, 39, 11, is a small bird with long wings.
- My 37, 3, 62, 28, 57, is a black bird.
- My 50, 38, 24, 43, 5, is a bird remarkable for its directly ascending flight.
- My 32, 4, 75, 22, 13, is a fish.
- My 44, 27, 60, 36, 17, is a grain.
- My 54, 48, 65, 74, 10, is an aquatic flowering plant.
- My whole is a proverb.

ISOLA.

CROSS-WORD.

My first is in canter but not in walk,
My next is in scolding but not in talk,
My third is in cavern but not in dell,
My fourth is in Sarah but not in Belle,
My fifth is in minute but not in hour,
My sixth is in oatmeal but not in flour,
My seventh is in ginger but not in mace,
My eighth is in contest but not in race,
My ninth is in spider but not in fly,
My tenth is in rainy but not in dry,
My eleventh is in sear but not in wash,
My twelfth is in pumpkin but not in squash,
My thirteenth is in purple but not in white,
My fourteenth is in darkness but not in night:
My whole is a city of some renown
On the map of Europe 'tis written down. C. E. A.

ALPHABETICAL ARITHMETIC.

L P M) S R O E N P (A S R O

R A T

A M P E

A P O T

A P S N

P T T M

A T R P

A T A R

L E

S.

PI.

Klaeb dale sode ton innotee a glenis cliprate fo deal,
tub si codemops fo brance dan niro.

DROP LETTER PUZZLE.

"-c-e-c-t-u-a-i-c-o-a-c-s-a-c-t-l-y-
n-a-c-o-k-d-n-h-o-h-r-i-e."

JOHN W. WHEATLEY.

TRANSPOSITIONS.

(Fill the blanks in each sentence with the same word transposed.)

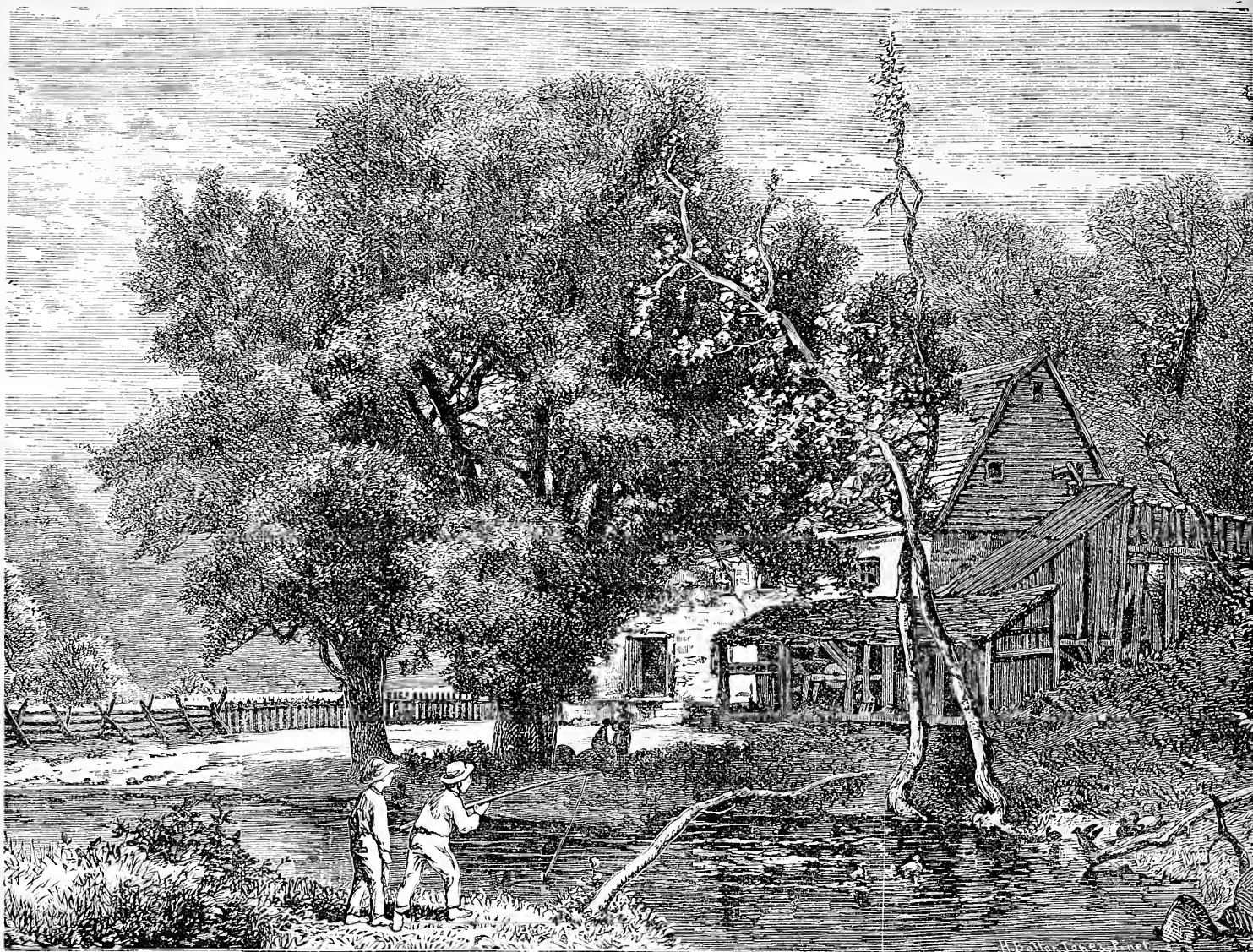
1. Do not — your child to —.
2. The glory of — is no —.
3. The carpenter gave me a —.
4. After crossing the — they —.
5. I bought a — and got it —.

M. P.

SQUARE WORD.

1. The sky. 2. An animal. 3. Astonished. 4. A mark.
5. To weaken. 6. An adder.

LITTLE FOLKS.



A SPRING SCENE IN MARYLAND. — Drawn and Engraved for the American Agriculturist.

CONCEALED FISH.

(Two in each sentence, one spelled forward, the other backward.)

1. He was so bad, a certain person would not have him.
2. It is late so let us go ahead. Ah! see! The play has commenced.
3. Much feeling may be expressed in the piano. "Do I delight in music?" Yes, indeed!
4. In trying to cross Doly bog, one is like a ship without a rudder.
5. He lost ten checks, which put him in a rage. NIP.

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER

ACROSTIC.—Auld lang syne.

A—msterdam.
U—tiea.
L—itchfield.
D—orchester.
L—ansingburg.
A—napolis.
N—ewark.
G—ettysburg.
S—alisbury.
Y—onkers.
N—ewton.
E—denton.

DIAMOND PUZZLE.

Architect.

A
I R K
D E C O Y
L E G H O R N
A R C H I T E C T
E C S T A S Y
S T E E R
A C E
T

ANIMALS ENIGMATICALLY EXPRESSED.—1. Ram. 2. Sloth. 3. Pouch. 4. Ounce. 5. Mare (mayor). 6. Bear (bare).

FIGURE BLANKS.—1. Thirty—ten. 2. Five—four—8. 3. One—seven. 4. Forty—two—four—nine. 5. One—eight. 6. Nine—eight. 7. Forty—two—ten—four—two—eight. 8. Six—eight—four—tray.

CROSS-WORD.—Be truthful.

Thanks for letters, puzzles, etc., to Cnr. Isola, Albert F. C., X. Y. Z., A. F. Conant, and Jacob Hales.

Additional names of those answering John W. Wheatley's enigma.—Nemo, Ira M. Price, Fanny Bond, and Bessie V. Griffin.

It may be as well to remark that puzzles upon the name of the *Agriculturist*, or upon that of any one of its editors or proprietors, is not likely to be ever published.



Send communications intended for Aunt Sue, to Box 111, P. O., Brooklyn, N. Y., and not to 245 Broadway.

A Spring Day in the Country.

We have before told you about our pictures. Some of them we give because they teach something, whether about our own, or some other country; other pictures are given merely because they amuse; others still, simply because they are *pictures*, and these, without any thought of what they may teach, are given because they are pleasant to look upon, as specimens of the engraver's art. If, in addition to this, they tell any story, all the better. If you were to compare the above picture with that of some costly city building in this country, or with that of some celebrated structure in the old world, or of some renowned ruin, we think that *our* youngsters would prefer this picture. If we were to ask you why? you would say: "It is home-like. I have seen something very much like that somewhere; I am sure that I have seen just such trees, standing by the side of a run or stream. There are boys engaged in fishing, too. I have fished in just such a stream, where there were trees like these, but"—We know why you say "but," for there is the old building, part house and part mill, with its "flume" to carry the water to the wheel. Then the style of the building is quite unlike anything that has been built within the last hundred years, so you reluctantly give it up, and admit that it is a place you never saw. "But is there any such place?" some will ask. Yes, it is a scene in Maryland, which you know is one of the oldest States, and probably the building, for there are many such, was put up long before the war of Independence. We chose it because it was so good a specimen of wood-engraving, and withal so pleasing a picture. The trees look like trees, and the water like water, while the building and all its surroundings, tell as plainly as need be, of days long gone by. So we give the picture because it is a good and pleasing one. But as you look at it, does it suggest nothing to you? The stream runs quietly, the trees are in leaf, the boys enjoy themselves at fishing, and a general air of quiet over the whole, suggests a pleasing "Spring Day in the Country." Ah, these spring days! now present to some of you, and soon to come to others, are there any other days like them? When are the leaves so fresh in their greenery, when

do we find such wild flowers, when do the birds sing so joyously, when does the stream ripple so laughingly as in those spring days, when the very air is filled with light and life and loveliness? Many a rich old man, were he to study this picture, would forget that he had, these many years, trodden the hard pavement, while the only glimpse of nature he could get, was by looking up between the walls of brick and stone, to the strip of blue sky, the same sky of which as a boy, he saw the whole canopy. You boys, who look upon this picture of a "Spring Day in the Country," try to see your present blessings, the pure air, the open country, the grand old trees, the swift-running stream, the singing birds, the humming insect's, while above all is the glorious sky, and all filled with the abundant sunlight. These are all grand and good, but these overhang and surround a place called *home*. There are a mother, a father, and brothers and sisters, whose love makes it always a "Spring Day in the Country." Are you—as many boys are—discontented? Do you wish to seek another life in the city, or elsewhere, away from home? Take one of these lovely spring days now here, or at hand, and go off by yourself, and think over the matter. Put all that you now have and can enjoy, on the one side, and all that you hope to have, after years of toil—in which you have lost all delight in country pleasures on the other—and then ask yourself "Is it worth while?" Mind, we do not say that no boys should leave the farm for a city life, but we do say that many make the change without proper thought. In these days the "spring-fever" is on; that feeling of discontent, when neither body or mind are at ease. Every boy 15 years old has probably had the "spring-fever," and at those times is very unhappy. When this comes, get your fishing rod and lines, and go to some quiet stream and fish and think. We do not expect you will catch any fish, but something better. Look around at the fresh forest, look down at the starting grass, look up at the sky overhead, and see if this world, especially your part of it, is so bad as it seems. If you don't take home any fish, you will have had a plenty of fishing, which should bring a more contented spirit, and your Spring Day in the Country will not have been wasted.

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ASK YOUR WATCHMAKER FOR

AND NOT WEAR OUT.

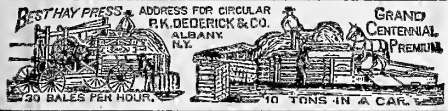
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ONCE PLANTED, WILL BLOOM FOR YEARS.

No trouble with seed-sowing—with hot-beds, or green-houses. The plants will soon form clumps large enough to divide. They are

EVERYBODY'S FLOWERS.

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All the latest novelties and choicest varieties of **VEGETABLE, FARM, and FLOWER** Seeds. **EGYPTIAN or PEARL MILLET**, 25 cents per packet; 5 packets for \$1.00. **CHUFA** or **EARTH ALMOND**, 60 cents per quart. **PRICKLY COMFREY** roots, \$2.00 per lb. **COMPTON'S EARLY FIELD CORN**, 60 cents per quart. All by mail prepaid. My circular of Novelties for the Farm, and illustrated descriptive catalogue mailed free to all applicants.

WM. H. CARSON,
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The New York Weekly Witness says: The New England Silver Plate Co., of New Haven, Ct., are reliable, and make a very attractive offer.

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Do not confound these first-class goods with the ordinary cheap qualities. They are guaranteed to be exactly as represented, or the money will be refunded.

Silver Plated Table Bells, 80 cts. Napkin Rings from 40 cts. to \$1.75 each.

H. W. JOHNS' ASBESTOS Liquid Paints.

These Paints are in every respect strictly first class, and second to no others in the market in purity, richness, and permanency of color, beauty of finish, and durability. They are prepared ready for the brush, in sixteen newest shades, and standard colors, suitable for the tasteful decoration of all classes of buildings, inside and out, and for all purposes where a perfect protective coating is required.

They contain no water, alkali, or other useless or deleterious ingredients, such as are used in nearly all the ready mixed or so-called chemical paints, and are guaranteed to be the most durable paints in the world for exposed wood and iron work.

Owing to the wonderful covering properties of these Paints, the farmer, merchant, and manufacturer can, by their use, preserve and beautify their buildings, fences, or other wood and iron work, at from one-half to two-thirds of the usual cost of other ready mixed paints, or white lead and linseed oil. These Paints are sold by standard U. S. gallon measure, and our packages contain from EIGHT to TWELVE PER CENT MORE PAINT than those usually sold.

ASBESTOS ROOF PAINT, for tin and shingle roofs, iron-work, agricultural implements, fences, out-buildings, etc. We guarantee this to be a better article than has ever before been offered to the public for similar purposes.

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Exclusively.—ALL Styles and Sizes for 'Invalids' and 'Cripples' Self-propulsion by use of hands only, in or out-doors. Comfort, durability, and ease of movement unequalled. Patentee and Maker of the "Rolling Chairs" pushed about at the Centennial. Send stamp for Illustrated Catalogue, and mention *American Agriculturist*.
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Bone Meal.

Fine ground. Warranted pure. Manufactured by
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to sell the celebrated cow fetter. It sells on sight. Warranted to make the worst kicking cow gentle to milk, in three days. There is nothing equal to it for breaking heifers. Retail price \$2. For further information send for illustrated circular to

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TRY THE ORANGE COUNTY SEEDS.—
See Advertisement on Page 151.



MRS. OLD FOGY DOES NOT USE THE ROBBINS WASHER.

MRS. COMMON SENSE DOES. TAKE YOUR CHOICE.

TO MAKE MONEY SECURE AN AGENCY

FOR THE

CELEBRATED

ROBBINS FAMILY WASHER.

This machine has been ON TRIAL for the past six months in every State and Territory in the Union, and the almost unanimous verdict of housekeepers is this: "**Your Washer has proved a complete success.**" Some of the reasons why this popular verdict has been reached may be found in these facts:

The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

By purchasing a **ROBBINS WASHER** you can count the hard drudgery of the washboard among the things of the past.

Therefore, we confidently say to every housekeeper in the land, You want a **ROBBINS WASHER**. You cannot afford to be without one. It will pay to buy one.

THE RETAIL PRICE IS ONLY \$3.50.

Sample to those desiring agencies, \$3.

In bringing the Robbins Washer before the public it becomes necessary to take into brief consideration the

ART OF CLEANSING FABRICS,

which, although so common, is yet imperfectly understood. Having had a lifelong experience in the laundry business—in care, in water works, hotels, public laundries, asylums, hospitals, &c.—we know whereof we speak. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash boilers, &c., have all done very well, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz.: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration of which are accomplished by the **ROBBINS LITTLE WASHER**.

WHAT IS IT THAT REMOVES THE DIRT?

You may ask all washerwomen and housekeepers, and your answer from nine out of ten will be: "Plenty of elbow grease, or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No; to do that you must first dip it in the water, and then rub it in again to force water through the fabric. That is what removes dirt after being softened by the chemical action of the soap upon it.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in uniting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

is embodied all the essential points. First, we have the desired heat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a large body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual being all that is required to complete the operation.

The Washer is composed of solid galvanized iron, which will not rust or corrode. There are two sizes—the No. 1, or family size, for ordinary household use; and No. 2, or hotel size, suitable for country hotels, boarding-houses, laundries, &c.

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TO PERSONS OUT OF EMPLOYMENT

we would say, if you want to secure a paying business, now is your time. Don't wait till the best territory is taken up, but send at once for sample machine and go to work. By following instructions you can sell to nearly every family in your neighborhood. Others have done it, and there is no reason why you should not. Full directions and instructions accompany each machine. Also, special terms to agents, circulars, testimonials, &c.

All orders must be accompanied with cash.

Remit by money order or registered letter to

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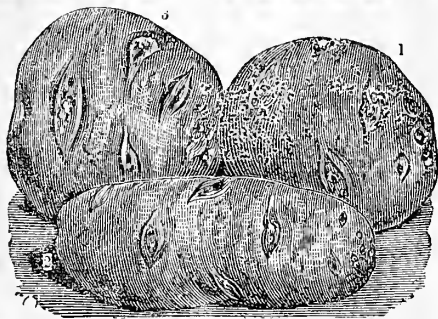
is what we can supply the readers of this paper, if desired, at a price as low as any jeweler pays for them at wholesale. We will mail on receipt of price, one set of six **SOLID Silver Tea Spoons** for \$3.50. (cost at retail from \$6 to \$7), or, for 85 cents, which covers the cost of the spoons, as well as postage and packing.

ONE SET OF 6 QUADRUPLE TEA SPOONS IN CASE, finely and heavily plated with **PURE NICKEL and COIN SILVER**, on a new metal, called **Alfenide**, which is very similar to the finest English white steel. It contains no brass or German silver in its composition, and consequently no poison, or disagreeable taste. Are very strong and will wear for years. Two sets, \$1.50. We shall not furnish these goods to the trade, consequently they cannot be supplied by any other manufacturer or dealer. We also make of same quality, Table Spoons 6 for \$1.75; Forks, 6 for \$1.75; Table Knives, balanced, solid steel handle and blade, triple plate, 6 for \$2. **New England Silver Plate Co., Man'rs New Haven, Ct.**



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New Varieties Potatoes.

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TROPHY.—This fine, second early variety resembles the Snowflake in shape and quality. It has a beautiful red skin, and may be justly called a "Red Skin Snowflake."

Price of each variety, \$1.00 per lb., 3 lbs., \$2.50, by mail post-paid.

MANHATTAN.—A new round late variety, with purple skin occasionally blotched with white, very hardy, of vigorous growth, flesh very solid, white, and of fine quality. It is enormously productive, an excellent keeper, and a most desirable variety for the main crop.

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HARLEQUIN, or VARIEGATED-LEAVED EARLY ROSE.—A sport of the Early Rose, with beautifully variegated foliage.

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ALPHA.—The earliest variety known, and of extra fine quality—matures its crop in 35 days.

BLISS' IMPROVED PEACHBLOW.—A cross between the well-known Jersey Peach Blow and the Excelsior, resembling the Peach Blow in appearance. In quality and earliness it far exceeds that variety, and will produce double the quantity.

ALPHA AND IMPROVED PEACHBLOW will be mailed, post-paid, per lb., 60 cts.; 3 lbs., to one address, \$1.25. Peck, \$1.00; bush, \$3.00; bbl., \$7.00.

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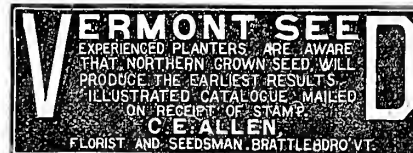
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Peruvian Guano, Pure Fine Bone, dissolved in Sulphuric Acid, Nitrate of Soda, Sulphate of Ammonia, Dried Blood and Flesh, and Potash Salts.

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For 50 bushels shelled corn use 3 bags, 400 lbs.
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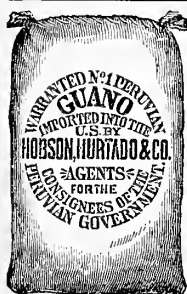
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Ammonia 7.69, Phos. Acid 5, Potash 7.59.
For use the same as Mapes' Complete Manure, but adapted more particularly to light lands, or such as require more Potash than Phosphoric Acid.
Price per ton, \$52.28—per bag (200 lbs.), \$5.50.

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For Trees of all kinds, Small Fruits, Grape Vines, Strawberries, etc. Price per ton, \$35—per bag (200 lbs.), \$3.70.

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Mapes' Lawn Top-Dressing.

For Lawns, Croquet Grounds, Grass Plats, etc. 100 lbs. for 2,500 sq. feet.
Price per ton, \$60—per bag (200 lbs.), \$6.30—per bag (100 lbs.), \$3.50.

Mapes' Spring Wheat Manure.

Very quick in its action—a complete manure for Spring Wheat.
Price per ton, \$50—per bag (200 lbs.), \$5.25.

Prepared Castor Pomace,

for ammoniating Composts, Tobacco, &c.—guaranteed 7 per cent Ammonia, see page 96, March Am. Agriculturist.

Superphosphate of Lime

(from Bones), guaranteed 14 to 15 per cent Soluble and Precipitated Phosphoric Acid.

Ammoniated Superphosphate of Lime.

Extra quality.

Prices very low. Circular on application to

ROBERT B. BROWN & CO.,
St. Louis, Mo.



THE BEST FERTILIZERS.

Per ton as follows:
GENUINE No. 1 PERUVIAN GUANO, \$56.
Russell Coe's Super Phosphate of Lime, \$40.
Double Refined Poudrette, \$22.50.
Ammoniated Animal Matter (Bone, Meat, and Blood), unequaled for the price, \$22.50.
Ground Bone, \$27 & 30.
Best Land Plaster, \$8 per ton, in barrels.
Send for TWENTY-THIRD annual pamphlet. Order direct of

H. B. GRIFFING,
Dealer in Agricultural Implements and Fertilizers,
60 Courtlandt Street, New York.

Matfield Fertilizer.

This is the only fertilizer professedly containing all the soil elements found in each crop. Prof. W. O. Atwater, of the Connecticut Agricultural Station, analyzed six of our different fertilizers, and found in every case, as we guarantee, that they contained a larger percentage of plant-food elements than we claimed by the labels placed on each package. Send for circular. Address

F. COPELAND,

Treasurer and General Agent Matfield Fertilizer Co.,
13 Doane St., Boston, Mass.

CHEAPEST FERTILIZER

BECAUSE THE BEST.

PREMIUM BONE

Grows **WHEAT** and **GRASS**, equal to manure, at **Half the Cost**, and lasts twice as long.
Farmers!! Send questions on Postal Card to **EXCELSIOR FERTILIZER WORKS**, Salem, Ohio. Circulars Free.

12 BOUQUET DAHLIAS, VERY SUPERB, every one a gem; by mail, \$2. **Amaryllis Johnsonii**, beautiful crimson, striped white, very fragrant, \$1 each; **Vallotta Purpurea**, 50 cts. each; the whole, post paid, \$3.
DEXTER SNOW, Chicopee, Mass.

HULL & SCOTNEY,

346 North Water St., Philadelphia, Pa.,
GENERAL COMMISSION MERCHANTS,
and Wholesale Dealers in Butter, Cheese, Eggs, Poultry, Lard, Tallow, Game, Potatoes, Apples, Hay, Grain, Flour, Fur, Wool, Cotton, Peanuts, Broom Corn, Foreign and Domestic Fruits. **Liberal Cash Advances** made on all Shipments but perishable goods. Send for Price List. **Stencel, &c., &c. Reference Cash**, or we refer to any Responsible House in our city.

Fresh and Genuine WETHERSFIELD ONION SEED.

(With a "Pedigree" as far back as the Revolution.)

THE BEST LARGE RED.....per lb., .75c.
THE BEST EARLY RED....." " .75c.
THE BEST EXTRA EARLY RED....." " \$1.00.
THE BEST YELLOW GLOBE DANVERS....." " .75c.
DANVERS HALF LONG ORANGE CARROT....." " 1.25
THE BEST LONG ORANGE CARROT....." " 1.00
Dolly Dutton Sugar Corn, Earliest known.....Per Qt., 70c.
Comstock's Premium Late Flat Dutch Cabbage, per lb., \$2.00
Egyptian Turnip Beet, True Stock....." " .75
Bastian's Early Turnips....." " 1.00

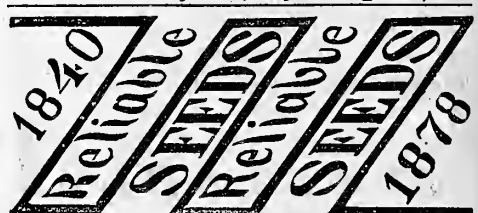
The above by mail, post-paid, at prices named, in quantities of not less than 1/4 lb. upwards.
East Hartford Extra Early Peas, Peck \$1.75; 1/4 Bu. \$3; Bu. \$6.
Extra Selected Champion of England Peas, Peck \$1.50; 1/4 Bu. \$2.50; Bu. \$5.00.
Ey. Minnesota Sweet Corn (true), Peck \$1.25; 1/4 Bu. \$2; Bu. \$4.
Stebbins' Improved Early Canada Corn (true), Peck 90c.; 1/4 Bu. \$1.75; Bu. \$3.50.
Gilead Prolific, seed saved from stock having not less than three ears each, by mail per Qt., 50c.; Exp. Peck \$2.00.
Catalogue free. Prices low. Seeds the Best. Terms Cash.

R. D. HAWLEY,
HARTFORD, CONN.

Cabbage Growers

and all Gardeners will find my new work on "Vegetable Plants" indispensable, as it gives explicit directions for growing all kinds of plants in open ground and under glass, also more valuable information on noxious insects than was ever before published. Dr. F. M. Huxamer, of New Castle, N. Y., says: "Many a single page contains more valuable hints than could be obtained for ten times the cost of the whole book." On receipt of \$2.50 I will mail one copy of this book and one pound of the finest and best Premium Flat Dutch Cabbage Seed you ever saw! In support of this assertion I will send testimonials from many eminent Horticulturists, and a sample of the seed free to any address.

ISAAC F. TILLINGHAST,
Late TILLINGHAST BROS.,
Factoryville, Wyoming Co., Pa.



CROSMAN BRO'S CATALOGUE & GUIDE, to the Flower and Vegetable Garden, for 1878. Elegantly Illustrated. Sent FREE. Address
[Established 1840.] **CROSMAN BRO'S**, Rochester, N. Y.



My Annual Catalogue of Vegetable and Flower Seed for 1878 will be ready by January, and sent free to all who apply; Customers of last season need not write for it. I offer one of the largest collections of vegetable seed ever sent out by any seed-house in America, a large portion of which were grown on my six seed farms. **Printed Directions for cultivation on every parcel.** All seed sold from my establishment warranted to be both fresh and true to name; so far that should it prove otherwise, I will refill the order gratis. As the original introducer of the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of other new vegetables, I invite the patronage of all who are anxious to have their seed fresh, true, and of the very best strain. **NEW VEGETABLES A SPECIALTY.**

JAMES J. H. GREGORY, Marblehead, Mass.

PRICKLY COMFREY.—The latest, best, and most productive forage plant introduced. Milk farmers try it and you will like it. Circulars and cuttings, now ready, by mail, postage paid, one dozen acts 75 cts.; per hundred \$4. Root and cut, \$2 per lb. growing plants in boxes by express, \$1 per doz. **GEORGE H. RICE**, Box 122, Worcester, Mass.

NEW FRUITS.

We offer for the spring of 1878-APPLES: Haas, Pewaukee, Walbridge, Tetofsky; PEACHES: Amsden, Ea. Beatrice, Foster, Steady, Sleeper's Dwarf; PLUMS: Wild Goose, Neumanns, De Caradeuc; CHERRIES: Large Montmorency, Louis Philippe. Also our usual large stock of Apples, Crabs, Peaches, Plums, Cherries, Currants, Gooseberries, Raspberries, &c., &c. Correspondence solicited.
HEIKES NURSERIES CO., Dayton, Ohio.

SEEDS-PLANTS.—Fresh Onion Seed, Red and Yellow, 75c. lb. by mail. Cold Frame Early Jersey Wakefield Cabbage, \$6.00 per M. Send for price list.
WM. W. STERLING, Cutchogue, Suff. Co., N. Y.

Small Fruit Plants, etc., cheap now. Club together and get 10 worth at 1,000 rates. See **JOHN S. COLLINS'** offer, page 112, last number.

A GREENHOUSE AT YOUR DOOR

For \$1.00 we will send free by mail either of the below-named collections, all distinct varieties:

9 Abutilons, or 4 Azaleas,
2 Begonias, or 3 Camellias,
2 Caladiums (fancy), or 8 Carnations (monthly),
12 Chrysanthemums, or 12 Coleus,
8 Centaureas or 8 other white-leaved plants,
8 Dahlias, or 8 Dianthus (new Japan),
8 Ferns, 3 Mosses, or 8 Fuchsias,
8 Geraniums Zonale, 8 Double, or 8 Scented,
8 Geraniums Fancy, 8 Variegated, or 8 Ivy-leaved
4 Gloxinias, 8 Gladioli, or 8 Tuberoses (Pearl),
4 Grape Vines, 4 Honey suckles, 4 Hardy Shrubs
8 Heliotropes, 8 Lantanas, or 8 Petunias,
8 Pansies (new German), or 8 Salvia,
8 Roses, Monthly, 8 Hardy Hybrid, or 4 Climbing,
8 Violets (scented), or 8 Daisies, English,
12 Scarce Bedding, or 12 Scarce Greenhouse Plants,
12 Verbenas, distinct and splendid sorts,
25 varieties of Flower, or 20 varieties of Vegetable Seeds,
or by EXPRESS, buyer to pay charges:
3 collections for \$2; 5 for \$3; 9 for \$5; 12 for \$6;
14 for \$7; 18 for \$10; or the full collection of 550 varieties
of Plants and Seeds—sufficient to stock a greenhouse and
garden—for \$25, to which our book "Gardening for
Pleasure" and Catalogue (value \$1.75) will be added.

PETER HENDERSON & CO.
35 Cortlandt St., New York.

BOWDITCH, THE FLORIST.

I will send my new priced catalogue free to all applicants. It contains a list of prices of over ONE THOUSAND PLANTS, and at such rates as to bring them within the reach of all.

Abutilons.....10c. Calla Lilies.....12c.
Ageratums.....08c. Cyclamens.....15c.
Begonias.....15c. Chrysanthemums.....10c.
Carnations.....10c. Fuchsias.....10c.
Cupheas.....08c. Geraniums.....10c.

Heliotropes.....10c.
Ivies.....15c.
Primroses.....15c.
Roses.....20c.
Smilax.....06c.

Send for combined Seed and Plant Catalogue.

PLANTS and SEEDS forwarded by MAIL FREE, and packed so as to ensure safety.

WM. E. BOWDITCH,
645 Warren St., Boston, Mass.

W. C. WILSON'S

ILLUSTRATED CATALOGUE OF
ROSES and BEDDING PLANTS
mailed free to all applicants.

W. C. WILSON & CO.'S
ILLUSTRATED CATALOGUE OF
SEEDS AND BULBS
mailed free to all applicants.

45 West 14th Street, New York.

Following Choice Collections free by mail upon receipt of price:

25 pkts. Flower Seeds, extra.....\$1.00
12 Tuberoses, Double, extra.....1.00
12 " Pearl.....1.00
12 Gladioli, extra......50
6 Dahlias, 6 sorts.....1.00

BEAUTIFUL EVER-BLOOMING

CARNATION PINKS!
Assorted. Best varieties. In colors of White, Carmine, Rose, Variegated, and Yellow. All labeled. Strong, healthy, well-rooted plants. Sent safely by mail to any Post-Office. 6 for 50c.; 14 for \$1.

DWARF PEARL TUBEROSE.
To all who send 10c. and postage stamp I will send 2 Flowering Bulbs and CATALOGUE OF FLOWER-PLANTS, etc., containing beautiful Chromo Card and instructions for flowering Tuberoses and growing Carnations. Catalogue alone, 3c. Address
CHARLES T. STAIR, Avondale, Chester County, Pa.

50,000 Double Tuberoses Bulbs.

First Quality Large Flowering Bulbs.....Doz. 100 1,000
.....\$.75 \$4.00 \$25.00
Second Quality Flowering Bulbs.....50 3.00 15.00
A few hundred EXTRA Large Bulbs.....1.00 5.00
Dwarf Pearl, 1st quality Flowering Bulbs.....8.00

If sent by Mail, 25 cents per dozen, EXTRA.
The past season having been the most favorable for the growth of bulbs, we offer the largest and best ever sent out by us.

MILLER & HAYES,

5774 Germantown Avenue, Philadelphia, Pa.

SEEDS, BULBS, &c. By mail, post-paid, 10 Double Tuberoses, fine flowering bulbs, 75c. 12 choice Gladioli, 12 sorts with name, \$1.00. 4 Lilies, 4 beautiful sorts, 50c. 5 choice Roses, 50c. All kinds of Flower and Vegetable seeds of the very best quality, at Five Cents per paper. Bulbs and Plants in variety. Catalogues free—send for one at once. **JOHN LEWIS CHILDS,** Queens, N.Y.

BY MAIL FREE.

\$11 To any address on receipt of \$1.00:
5 CHOICE TEA ROSES,
4 ASSORTED VERBENAS,
2 HELIOTROPIES,
2 GERANIUMS,
2 FUCHSIAS,
2 COLEUS.

CROMWELL & CONDON,
Baltimore, Md.

Office Patapsco Nurseries.

FLOWER SEEDS.—800 best varieties at wholesale prices. 5ct. pkts. for 2½ cts. 10 ct. pkts. for 5 cts., &c. Send for catalogue. D. C. MCGRAW, Riverside Gardens, Binghamton, N.Y.

New Coleus**"MULTICOLOR"**

A new and distinct species, introduced from the Solomon Islands. In color it is remarkable for the number of rich shades of crimson, red, rose, &c., into which the leaves sport. It is a very beautiful plant, and will be found among the most useful of its tribe for decoration.

Price—40 cts. each by mail prepaid. Price to the trade on application.

ELLWANGER & BARRY, Rochester, N.Y.

ROSES

By mail, post paid, (on own roots) 25 cents apiece, \$2.00 per dozen, \$12.00 per hundred. Large plants (budded or on own roots) by express at purchaser's expense 10 cents apiece, \$4.00 per dozen. The most select collection in America. Send for Catalogue, with colored plate, 10c; plain, free.

ELLWANGER & BARRY, Rochester, N.Y.

THE DINGEE & CONARD CO'S

BEAUTIFUL EVER-BLOOMING

ROSES

We deliver **STRONG POT ROSES**, suitable for immediate flowering, safely by mail, at all post offices. 5 splendid varieties, your choice, all labeled, for \$1; 12 for \$2; 19 for \$3; 26 for \$4; 35 for \$5; 75 for \$10; 100 for \$13. Send for our New Guide to Rose Culture, and choose from over 300 finest sorts. Our Great Specialty is growing and distributing roses. **THE DINGEE & CONARD CO.,** Rose Growers, West Grove, Chester Co., Pa.

NEW and RARE ROSES.

We offer from our list of over 500 Varieties of Roses. Well grown, one year plants, not grown on own roots, our selection. Hybrid Perpetual and Noisette, \$3 per doz.; \$20 per 100. Teas and Chinas, \$2.50 per doz.; \$16 per 100. Young plants per mail, \$1.00 per doz.; \$7 per 100. Also the rarest and choicest Evergreen and Ornamental Trees and Shrubs of all varieties for planting in Lawns, Yards, etc.

MILLER & HAYES, Mount Airy, Philadelphia, Pa.

ROSES

6 for \$1, 14 for \$2, postpaid. Bedding & Greenhouse Plants by mail. Catalogue free. J. T. Phillips & Son, West Grove, Chester Co., Pa.

ROSES | TUBE ROSES

\$1.00 per Dozen. 50c. per Dozen.

BEDDING PLANTS, 75c. per Dozen.

All first class, guaranteed. Send for Catalogue FREE.

Address, **B. F. CRITCHELL,** Cincinnati, O.

A DOLLAR FLOWER GARDEN.

10 pkts. Choice Annual Flowers, worth.....50 cents.
2 Choice Gladioli Bulbs, ".....20 "
1 Japan Lily Bulb, ".....30 "
2 Double Tuberoses Bulbs ".....30 "

Sent, Post-paid, for \$1.00.

Catalogue free. **W. B. DIMON, JR.,** Milan, C.

10 ROSES MAILED FREE FOR \$1

Splendid assortment of Plants sent safely by express or mail, any distance. Satisfaction guaranteed. Send 3 cent stamp for catalogue. Address,

R. C. HANFORD & SON,
Columbus Nursery, Columbus, Ohio.

14 GERANIUMS,

fine sorts, for One Dollar by mail. All kinds Plants and Roses cheap. Lists free.

Tyra Montgomery, Mattoon, Ill.

SPLENDID FLOWERS

Strong Plants, your choice, delivered by mail free of cost at your door. Our New Hand-Book of 24 years' experience sent free, with directions for culture of over 1200 best varieties. Centennial medal. Largest assortment. Low prices. All labeled. Satisfaction assured. 6 Roses, all named, \$1; 13 for \$2. **HOOPER, BROTHERS & THOMAS,** Cherry Hill Nurseries, West Chester, Pa.

WHITE POND LILIES.

Strong roots dug fresh from the ponds, well packed and mailed for 25 cts. each, \$2.00 per doz. They bloom finely in tubs and artificial ponds.

CAPE COD CRANBERRY PLANTS, 35 cts. per 100. \$2.25 per 1,000, pre-paid by mail; 10,000 by express, \$15.00. Circulars with directions for planting both, free.

J. A. VAUGHAN & CO.,
Carver, Plymouth Co., Mass.

WHITE WATER LILY.—Strong roots of this fragrant Lily, with printed directions for planting in tubs and ponds, 25 cts. each, \$2 per doz., by mail. **MANN BROS.,** Randolph, Mass. P. O. Box 130.

ADVERTISING RATES.**ENGLISH EDITION.**

Ordinary Pages, \$1.00 per line (agate), each insertion. Last Page, and Third Cover Page, \$1.25 per line. Second Cover Page—\$1.50 per line. Page next to Reading and Last Cover Page—\$2.00 per line. No advertisement taken for less than \$3.00 each insertion. Fourteen agate lines make one inch.

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Ordinary Pages, 10 cents per line, each insertion. Second Cover Page, 15 cents per line. Page next to Reading and Last Cover Page, 20 cts. per line. No advertisement taken for less than \$1.00 each insertion.

No Advertisement of Medicines or Humbugs received. Address all orders to

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 129.

Oyster Shell Lime.—"B." Oyster shell lime is a very pure kind of lime containing a small percent of phosphoric acid and no magnesia; it is therefore worth a little more than stone lime. The price depends upon the facility for gathering the shells and the cost of fuel. It will pay for use at 10 to 15 cents a bushel.

A Tonic for Pigs.—"C. A. F." Reno Co., Kansas. A good tonic for hogs is made as follows: Take 5 pounds of linseed meal, one pound of charcoal, 4 ounces of gentian root powdered, 4 ounces of sulphate of copper, one pound each of flowers of sulphur and of salt. Mix, and give a tablespoonful in the feed occasionally.

Cow Leaking Milk.—"W. H. D." New Preston, Conn. There is no cure for a cow that leaks milk. This fault arises from a laxity of the muscular stricture which closes the duct of the teat, and is therefore beyond remedy. To bother with devices to prevent it would cost more than the loss arising from selling the cow for beef, and procuring another.

Planting Beans.—"B. W. Y." New Castle, Pa. A light soil is best adapted for beans, but any soil that is well prepared, dry, and mellow, will produce a fair crop. The usual method of planting is in rows 24 to 27 inches apart, and the beans 6 inches apart in the rows, or in hills 18 inches apart. From two pecks to a bushel of seed is needed for an acre.

Meeting of Stock Graziers in Colorado.—The 8th annual meeting of the Colorado Growers' Association, was held at Denver, Jan. 8th. The importance of this interest was clearly set forth in the course of the proceedings. The members of the Association represent 600,000 head of cattle, a capital of \$10,000,000, and employ more than 2,000 men. The shipments eastward the past season have been 100,000 head, worth \$3,000,000. These cattle now fully occupy the grazing lands of the whole State, and the importance of securing a steady and staple foundation for this interest, is unquestionable. At present the stockmen hold their grazing grounds by possession only, the peculiar condition of the tenure of the lands and the laws regarding their sale, practically prohibiting ownership or legal right to occupation. We have frequently pointed out this anomalous and injurious condition of things, and hope that very soon some change in the law will be made, by which the absurd restriction of 160 acres to each purchaser, of lands that are totally useless for agriculture, may be abrogated; and some method may be found of leasing large tracts or selling them at reasonable prices for pastures only.

The Value of Mixed Food.—"G. C. C." When straw, or other fodder of inferior value, is fed along with some rich concentrated food, as corn, oil cake, bran, etc., in proper proportions, the mixture can be made of equally nutritious value with good, medium, or the best hay, so that by adding to the straw the needed equivalent, we can make a good substitute for the hay. The proper proportions can be gathered from Professor Atwater's articles on feeding stock in former numbers.

Catalogues Received.

When we gave such ample space last month, we supposed that we had finished up our catalogue list for the season. Since then, a large number have come to hand which have equal claims upon us with the others, and we give them here. When there are several departments

embraced in one catalogue, we, as before, place it under the head of what appears to be the leading business.

NURSERYMEN.

The number of nursery establishments that add a floral department to their nursery business is annually increasing, but we can not record these under distinct heads, unless separate catalogues are issued.

J. W. ADAMS, Springfield, Mass.—A general fruit and ornamental stock, with Worden grape as a specialty.

EDWIN ALLEN, New Brunswick, N. J., an abridged, well-selected list of fruit and ornamental trees, by an excellent pomologist.

ROBERT BUIST, Philadelphia, Pa., though most generally known as a florist, has an ample fruit and ornamental tree and plant catalogue.

BUSH, SON & MEISSNER, Bushberg, Jefferson Co., Mo.—Their price list of grape vines is as full, compact, and instructive as usual.

HARVEY CURTIS, Owego, N. Y.—General nursery stock. A HANCE & SON, Red Bank, N. J., send both retail and trade lists of a large and most varied stock, including a number of specialties and novelties.

HEIKES NURSERIES Co., Dayton, Ohio.—Semi-annual trade list of general stock.

HOOPES, BROTHER & THOMAS, Westchester, Pa.—Trade list, offering favorable terms to wholesale buyers. T. S. HUBBARD, Fredonia, N. Y.—A wholesale list of grapes, etc., with wood for propagating.

THOS. JACKSON, Portland, Me.—Wholesale catalogue of general stock. Very full in Evergreens.

J. JENKINS, Winona, Ohio, makes \$1.00 collections of fruits and ornamental plants a specialty.

W. W. JOHNSON, Central Lake, Austin Co., Mich.—Forest-tree seedlings, with notes on planting; also forest-tree seeds.

SAMUEL KINSEY, Dayton, Ohio.—Small fruits in large variety; also ornamental plants.

LAPHAM & ANTHONY, Clayton, Del., call theirs the Dollar Nursery, as they send plants in \$1 collections.

WILLIAM H. MOON, Morrisville, Pa.—General fruit-list; very full in ornamental plants.

PARSONS & SONS Co., Flushing (L. I.), N. Y.—A special list of "New and rare plants." A remarkably choice collection, few of which are to be found elsewhere.

WM. A. STRONG & Co., Brighton, Mass.—A general catalogue with a list of new and desirable varieties.

F. TROWBRIDGE, Milford, Conn.—A cranberry catalogue, with directions for growing.

T. C. THURLOW, Newburyport, Mass.—General list, and a special one of evergreens.

E. R. UNOERHILL, Poughkeepsie, N. Y.—Small fruits, with novelties, especially in strawberries.

HENRY WILBUR, Montgomery, Mich., sends three lists; fruits in general, peaches, and ornamental shrubs, etc.; each with a full cultural treatise.

SEEDSMEN.

BEACH, SON & Co., No. 7 Barclay St., N. Y., in the "American Garden," continued as a quarterly, offer their stock, and give much useful and timely instruction.

PAUL BUTZ & SON, New Castle, Pa.—List of tested garden, field, and flower seeds.

W. H. BURLING, Plainfield, Conn.—A general list of seeds and plants, and a special list for market gardeners. J. H. & W. E. CONE, Hartford, Conn., offer genuine Wethersfield garden-seeds, implements, etc.

CURTIS, COBB & WASHBURN, Boston, Mass.—The former firms of Curtis & Cobb and Washburn & Co. have united their forces, and the result is an immense catalogue, full in every department.

HENRY A. DREER, No. 714 Chestnut St., Philadelphia, Pa., presents in one compact catalogue a full stock of seeds of all kinds, implements, and florists' supplies, also a large list of greenhouse and other plants.

HAWKINS & CORNISH, Goshen, Orange Co., N. Y.—General seed stock; potatoes a specialty, with kinds not offered elsewhere.

HOVEY & Co., No. 16 South Market St., Boston, Mass.—A full catalogue, with a long list of novelties, as usual.

E. B. JENNINGS, Southport, Conn.—Choice potatoes and seeds of his own growing.

A. W. LIVINGSTON'S SONS, Reynoldsburg, Ohio.—General seed list, with specialties of their own.

THOMAS MEZHAN, Germantown, Pa.—Special list of fruit seeds, kept in condition for spring planting.

A. C. NELLIS, Canajoharie, N. Y.—Seeds, vegetable plants, greenhouse plants, and bulbs.

GEO. W. PARK, Mt. Vernon, Ohio, offers a general stock of seeds, bulbs, etc.

FRANK S. PLATT, New Haven, Conn.—In liberal size, large type, fine paper, and excellence of illustration, this catalogue is something remarkable; and its matter seems to be as good as its manner.

W. H. SPOONER, Boston, Mass., preserves the same neatness and compactness which have heretofore made his very full catalogue noticeable.

ROBERT VEITCH & SON, New Haven, Conn.—A general wholesale seed list.

JAMES VICK, Rochester, N. Y.—Besides the ample general catalogue noted last month, sends a special wholesale list.

FLORISTS AND DEALERS IN PLANTS AND BULBS.

C. E. ALLEN, Brattleboro, Vt., in addition to greenhouse and bedding plants, offers seeds and small fruits.

BELLEVUE NURSERY Co., Paterson, N. J., with their usual full stock, offer several novelties. Also seeds.

P. J. BERCKMANS, Augusta, Ga., besides carrying on an immense nursery, has an extensive florist's establishment, and offers, besides others, many plants suited especially to the Southern States.

ROBERT BUIST, Sr., 67th St. and Darby Road, Philadelphia, Pa.—That this establishment, now nearly half a century old, still keeps up its freshness, is shown by this full catalogue.

PAUL BUTZ & SON, New Castle, Pa., with general stock, offer many novelties.

THOMAS ELVEYSON, New Brighton, Pa., besides a large plant list, has a full seed catalogue.

ELLWANGER & BARRY, Rochester, N. Y., issue a special rose catalogue, which is not a mere price list, but is a readable treatise.

WM. A. HACKETT, Duquene, Iowa, has a full stock, with most of the novelties of the year.

HOOPES, BROTHER & THOMAS, Westchester, Pa., have a special catalogue of greenhouse and bedding plants, and offer many quite new.

M. MICHEL, Bryan, Brazos Co., Texas.—A full stock, with abundant cultural directions adapted to the peculiar climate of Texas.

MAHLON MOON & SON, Morrisville, Pa., send a special catalogue of Gladioli, of which they have one of the largest and choicest collections in the country.

JOSEPH T. PHILLIPS & SON, West Grove, Chester Co., Pa.—A full illustrated list, with directions for cultivation.

JOHN SAUL, Washington, D. C.—We always look to this catalogue for choice novelties, and the present issue does not disappoint. It has a colored plate of the magnificent pelargonium "Mrs. John Saul."

DEXTER SNOW, Springfield, Mass., in issuing a general list, does not forget his old specialty, the Verbena, of which he offers a new set.

CHARLES L. STARR, Avondale, Chester Co., Pa., makes a specialty of carnations, but has a full general list.

J. M. THORBURN & Co., No. 15 John St., N. Y.—A full list of Gladioli, with other spring bulbs; also hardy perennial and small fruit plants.

ROBERT VEITCH & SON, New Haven, Conn., one of the oldest houses in the country, make but little noise, but have the plants, and choice ones.

H. W. WILLIAMS & Co., Galesburg, Ill., are growers of Gladioli, and issue list.

WM. C. WILSON, No. 46 West 14th St., N. Y., and Astoria (L. I.), N. Y., make their catalogue for this year as much a wonder in the way of variety as ever.

WOOLSON & Co., Passaic, N. J., make a specialty of hardy plants, and their list for this year contains many not before offered.

FOREIGN.

J. A. SIMMERS, Toronto, Ont., Canada.—A copious and well-illustrated catalogue of about everything in the way of seeds.

MAX LEICHTLIN, Baden Baden, Germany, sends a catalogue of his remarkable private garden, from which so many choice things have passed into general cultivation.

HAAGE & SCHMIDT, Erfurt, Germany.—A seed catalogue that is immense, for the variety of its contents.

FARM AND GARDEN IMPLEMENTS, ETC.

COLBY & Co., Benton Harbor, Mich.—Fruit packages of all kinds.

CHADBORN & COLDWELL MFG. Co., Newburgh, N. Y., make the Excelsior Lawn-Mower, and, in a beautifully illustrated circular, offer a reduction in prices for both hand and horse patterns of this popular machine.

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GRAHAM, EMLEN & PASSMORE, No. 631 Market St., Philadelphia, Pa., makers of the Philadelphia Lawn-Mower, illustrate and describe the merits of the various forms of their excellent machines in a neat catalogue.

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U. S. WIND-ENGINE Co., Batavia, Ill., describe a variety of their small haying tools, a very effective grapple-fork, hay-carriers, etc.

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THE NEW YORK PLOW Co., New York, give descriptive illustrated circular of their specialties, among which are several makes of Adamant plows, with movable and reversible points, root-cutters, and other implements.

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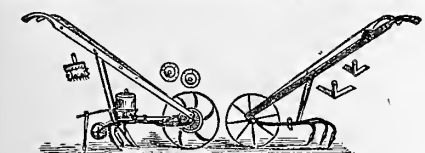


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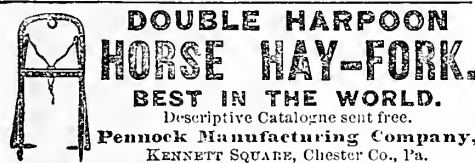
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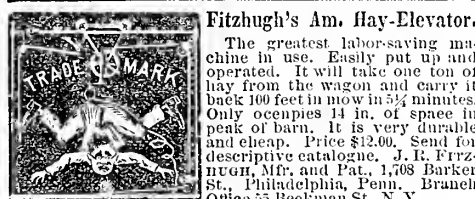


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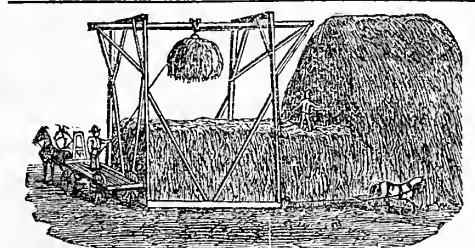
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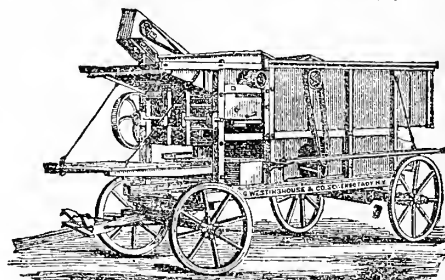
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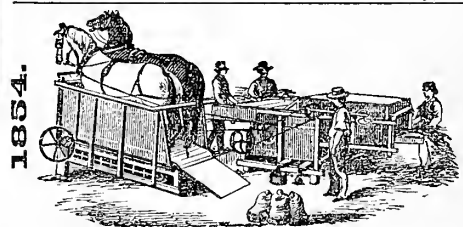
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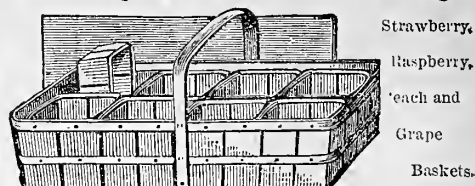
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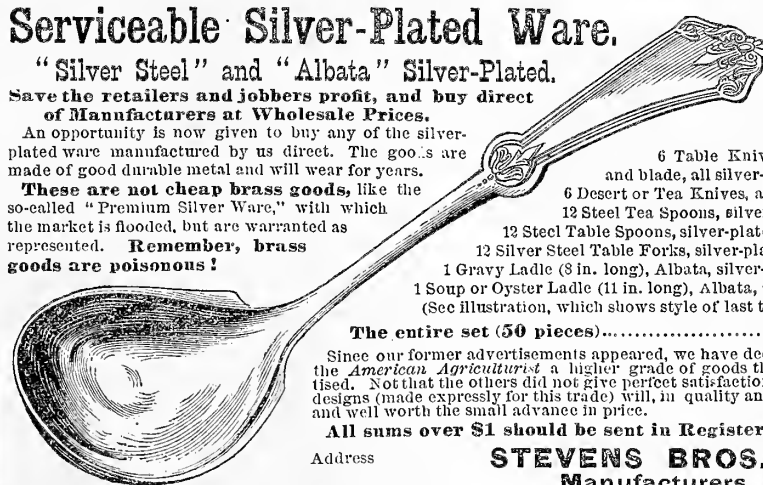
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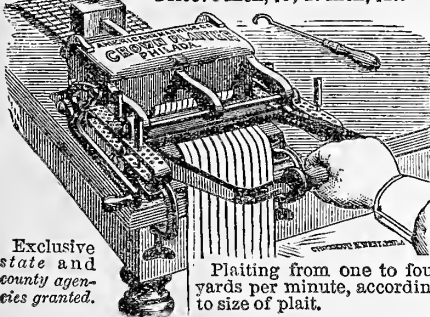
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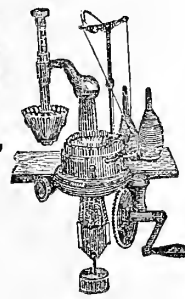
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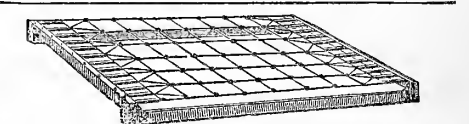
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LESS WEIGHT! LIGHTER DRAFT!
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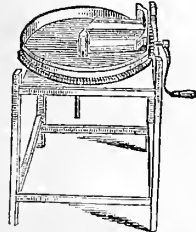
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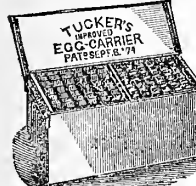
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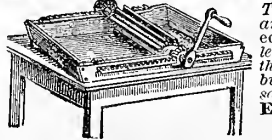
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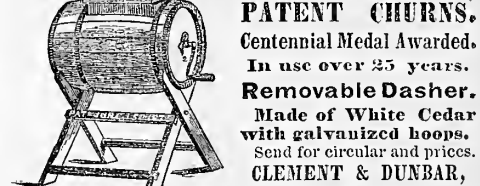
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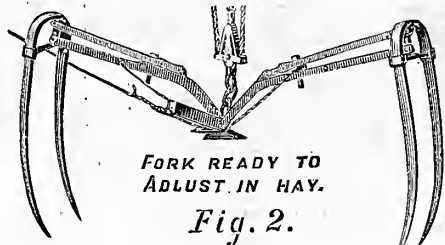
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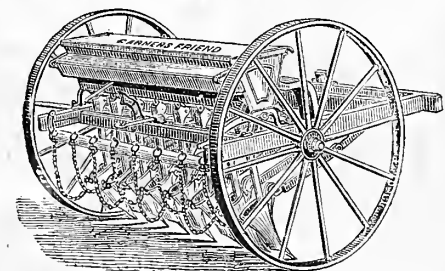


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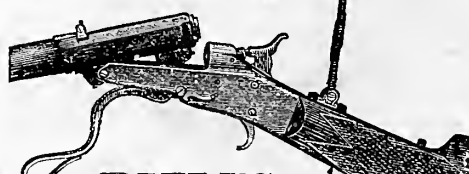
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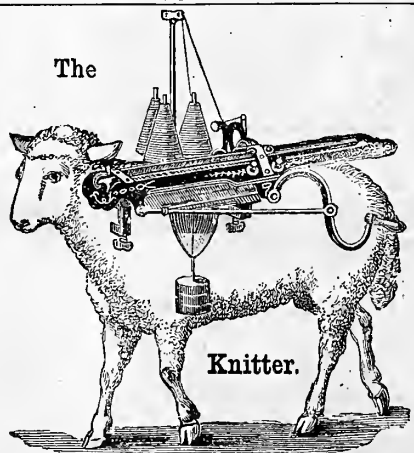
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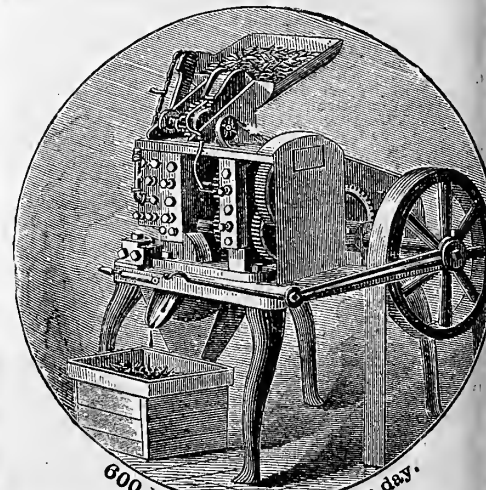
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We annex a sample of the testimonials we receive daily from all parts of the country:

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GLOBE NAIL CO., Boston, Mass.
Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the **Globe Nail**, circulated by a rival manufacturer over the humane signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals, horses in particular—I desire to say a few words in favor of **The Globe Nail**. Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the **Globe Nail** in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say it has no superior in point of **Toughness, Shape, and Finish**, if it has any equal. I have used about fifteen hundred pounds of **Globe Nails** a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat! I am willing to pay, without any suit, for all horses that are lamed in my shop by using the **Globe Nail**. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
(Signed),

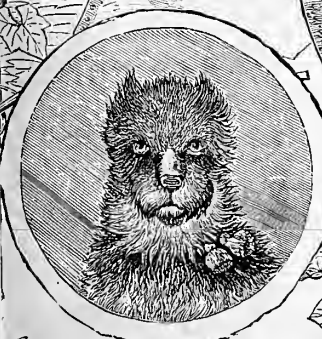
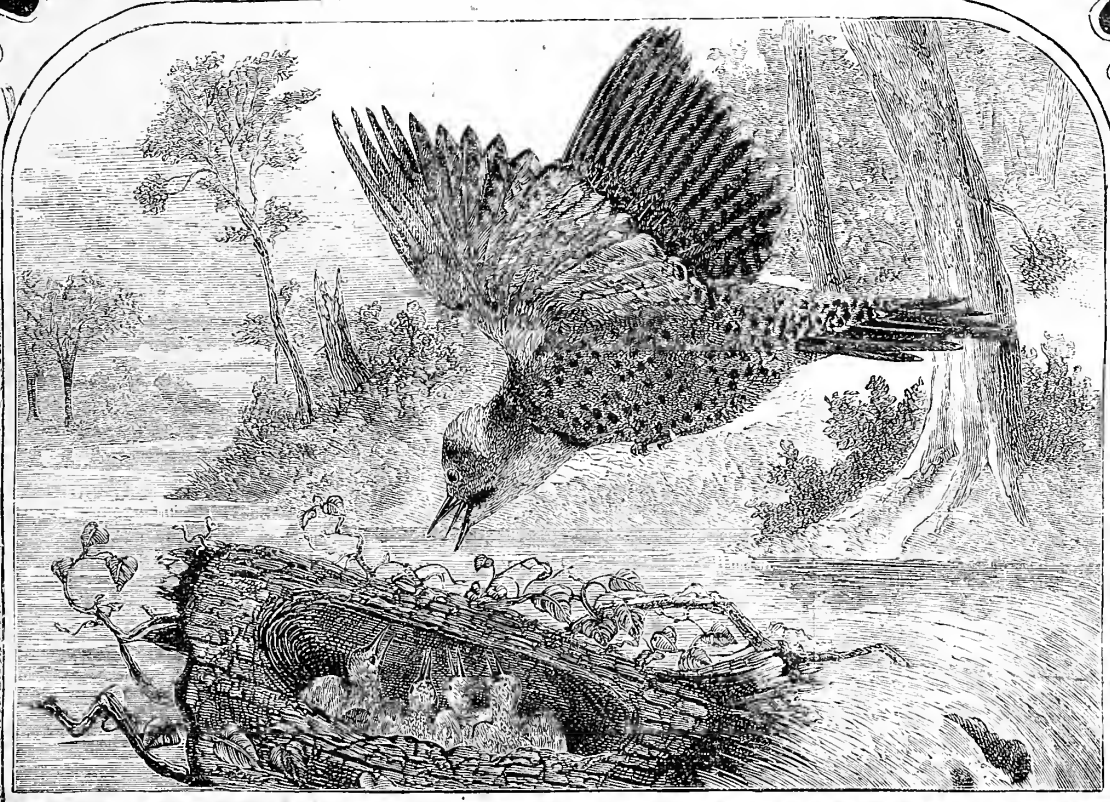
P. H. O'NEILL,
Horse Shoer, No. 1007 Broadway.
P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary.

The best Horse is sure to win. SO
CLEAR THE TRACK FOR THE
GLOBE NAIL CO.

MAY, 1878.

AMERICAN AGRICULTURIST

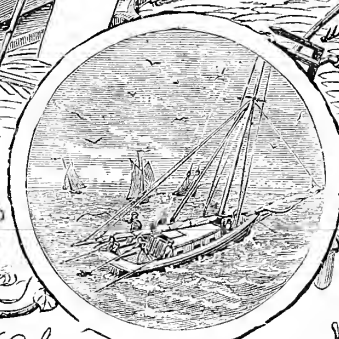
FOR THE FARM, GARDEN & HOUSEHOLD.



VOL. XXXVII.

NUMBER 5.

PUBLISHED BY THE
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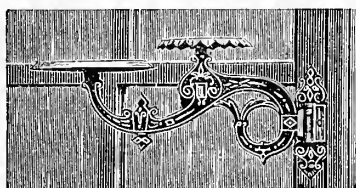
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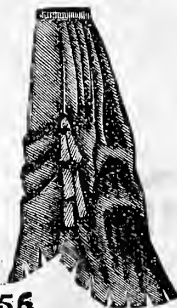
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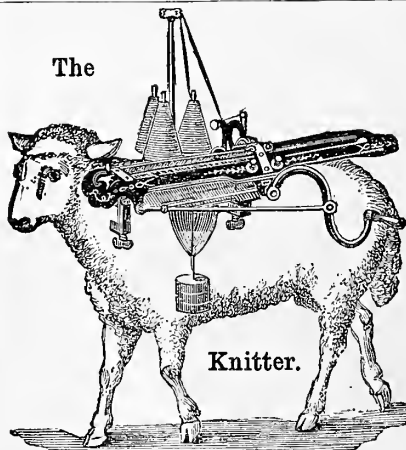


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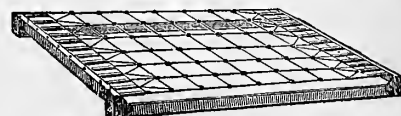
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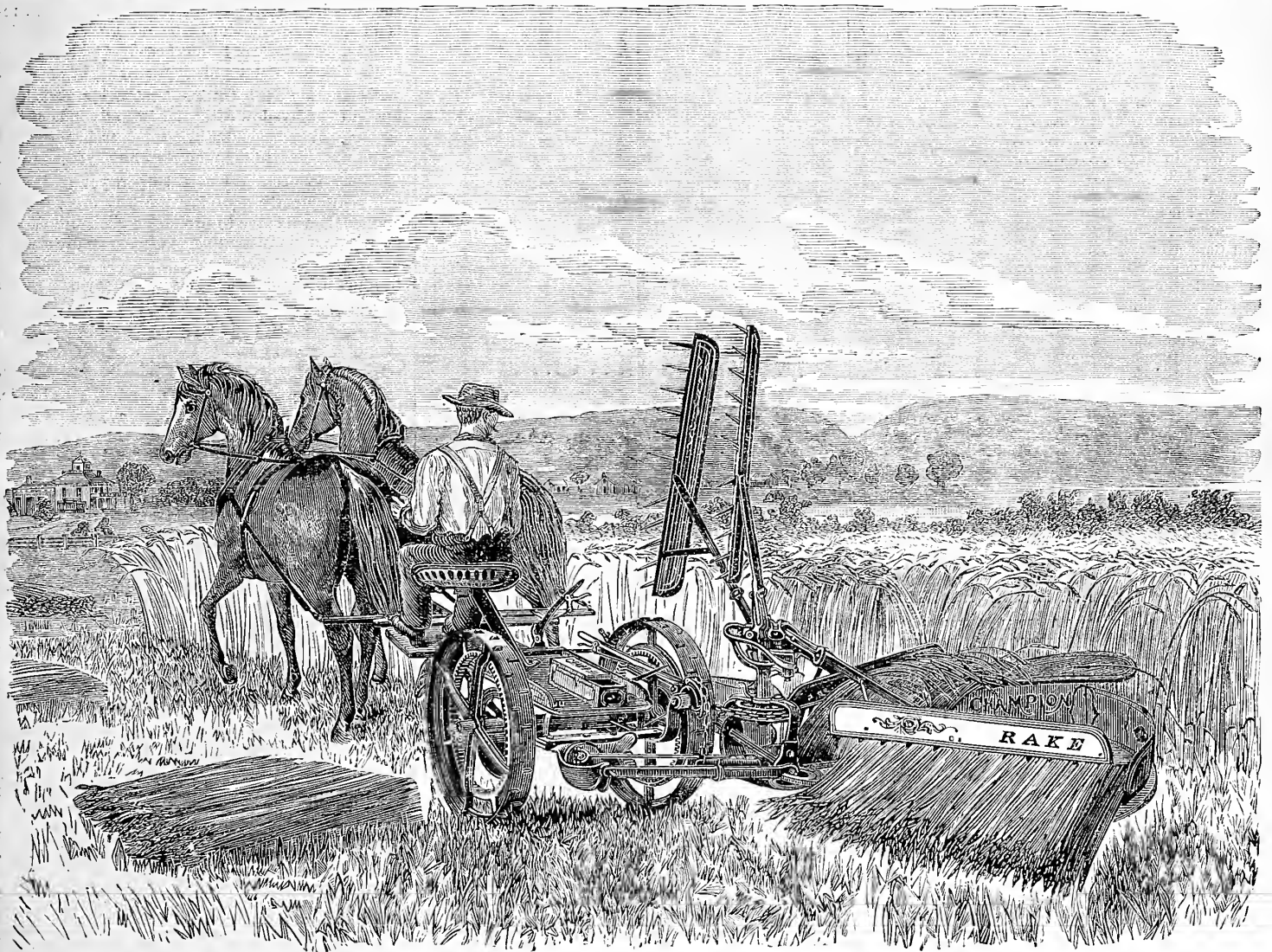
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VOLUME XXXVII.—No. 5.

NEW YORK, MAY, 1878.

NEW SERIES—No. 376.



THE CHAMPION COMBINED MOWER AND SELF-RAKING REAPER.—Drawn and Engraved for the American Agriculturist.

Until recently, combined reapers and mowers have been considered unsatisfactory machines, and farmers have been to some extent prejudiced against them. This has been unfortunate, because few farmers can afford to buy two machines to perform two similar operations, when one could be made to serve the purpose. But after six years of successful work it has been proved that the mechanical difficulties in the way of the effective operation of a combined machine have been vanquished by the manufacturers of the machine of which we give the above illustration. This is the Champion Combined Self-raking Reaper and Mower, made at Springfield, Ohio. The character of the machine is readily apparent from the engraving, and the full details, which show the reaping-machinery added to the mower, are given on another page. At figure 1, on page 168, the mower is shown so clearly, that there can be no mistake about the parts, and at figure 2 the added apparatus is so shown, that the operation of the combined machine

is equally clear. It is needless to say anything in regard to the reputation of the Champion machines. The name is familiar to every farmer, who has seen or heard of mowers and reapers, and the fact that 35,000 of these machines are made annually in the workshops of the Company—the largest manufactory of agricultural implements in the world—evidences the estimation in which they are held. In regard to awards for excellence at exhibitions, the Champion machines have stood in the front rank of those exhibited. It took five first premium medals at the Centennial Exhibition, and an award of five diplomas for the finest exhibit in the Hall and for merit in the great field trial held in connection with the Centennial. At this trial the Champion machine recorded the remarkably light and hitherto unexampled draft of only 131 pounds. It also succeeded in cutting perfectly grass that had been beaten and laid by storms, and in addition, to make the test more severe, had been flattened by a heavy roller drawn over it. No severer test than this could be

imagined. As a reaper it cuts the grain successfully, although it may be laid and tangled in the worst manner, and delivers it in good and even gavels ready for binding. These two important operations are accomplished equally well, and the change from mower to reaper or back again can be made with ease in twenty minutes. Clover-seed and flax may also be successfully harvested with it. The catalogues of makers of first-class machinery are publications of high excellence, and serve a purpose beyond mere advertising. To this the catalogue describing the Champion is no exception, as the machine is shown in action in its various combinations and positions, including its appearance on the road, while every detail of machinery is given with such distinctness and accuracy, that one at all acquainted with mechanics can, by a study of the catalogue, understand the construction of the machine, and form an opinion of its working in the field, almost as well, as from an actual inspection of the thing itself.

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Calendar for May.

Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, C. Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
1	W	4:55	6:39	4:4	4:58	6:56	4:6	4:59	6:52	4:10
2	T	4:53	7:0	sets	4:57	6:57	sets	4:57	6:53	sets
3	T	4:52	7:1	8:45	4:56	6:58	8:39	4:56	6:54	8:34
4	W	4:51	7:2	9:49	4:54	6:59	9:42	4:56	6:55	9:36
5	Th	4:49	7:4	10:47	4:53	7:0	10:40	4:57	6:56	10:34
6	F	4:48	7:5	11:36	4:52	7:1	11:30	4:56	6:57	11:24
7	T	4:47	7:6	morn	4:51	7:2	morn	4:55	6:58	morn
8	W	4:46	7:7	0:17	4:50	7:3	0:12	4:54	6:59	0:7
9	Th	4:45	7:8	0:50	4:49	7:4	0:47	4:53	7:0	0:43
10	F	4:43	7:9	1:19	4:48	7:5	1:17	4:52	7:1	1:14
11	S	4:42	7:10	1:45	4:47	7:6	1:44	4:51	7:2	1:43
12	S	4:41	7:11	2:9	4:46	7:7	2:10	4:50	7:3	2:10
13	M	4:40	7:12	2:33	4:45	7:8	2:34	4:49	7:3	2:36
14	T	4:39	7:13	2:59	4:44	7:9	3:2	4:48	7:4	3:5
15	W	4:38	7:14	3:29	4:43	7:10	3:34	4:47	7:5	3:39
16	T	4:37	7:15	rises	4:42	7:11	rises	4:46	7:6	rises
17	F	4:36	7:16	9:8	4:41	7:12	9:2	4:45	7:7	8:55
18	S	4:35	7:17	10:8	4:40	7:13	10:1	4:44	7:8	9:55
19	M	4:34	7:18	10:35	4:39	7:14	10:49	4:43	7:9	10:43
20	T	4:33	7:19	11:33	4:38	7:15	11:28	4:42	7:10	11:23
21	W	4:32	7:20	morn	4:37	7:16	morn	4:41	7:11	morn
22	Th	4:31	7:21	0:2	4:36	7:17	0:21	4:40	7:12	0:21
23	F	4:30	7:22	0:49	4:35	7:18	0:46	4:39	7:13	0:45
24	S	4:29	7:24	1:7	4:34	7:19	1:7	4:38	7:14	1:6
25	S	4:28	7:25	1:26	4:33	7:20	1:27	4:37	7:15	1:27
26	M	4:28	7:26	1:45	4:33	7:21	1:47	4:37	7:15	1:49
27	T	4:27	7:27	2:6	4:32	7:22	2:9	4:36	7:16	2:13
28	W	4:27	7:27	2:30	4:32	7:22	2:35	4:37	7:17	2:39
29	Th	4:26	7:28	3:0	4:31	7:23	3:5	4:37	7:18	3:11
30	F	4:26	7:29	sets	4:31	7:24	sets	4:37	7:18	sets

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHICAGO.	CHICAGO.
New M'n 2 8 6 mo.	7 54 mo.	7 42 mo.	7 30 mo.	7 42 mo.	7 42 mo.
1st Quart 9 5 18 ev.	5 35 ev.	5 24 ev.	5 12 ev.	5 35 ev.	5 35 ev.
Full M'n 16 9 17 mo.	9 35 mo.	9 23 mo.	9 11 mo.	9 35 mo.	9 35 mo.
3d Quart 23 8 58 ev.	8 46 ev.	8 34 ev.	8 22 ev.	8 58 ev.	8 58 ev.
New M'n 31 9 4 ev.	8 52 ev.	8 40 ev.	8 28 ev.	9 4 ev.	9 4 ev.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1878.

Hints for Work.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.]

Corn Planting.—Over a large portion of the country the planting of corn begins with May. Although early planting is convenient, and in some cases unavoidable to prevent stress of work, yet with corn it is a question if anything is saved by hurrying it into the ground. The first operation, that of

Plowing Sod Ground, we generally postpone until ready to plant, so that the seed may go into fresh mellow soil, and the clover grow as much as possible. With fallow ground this may not apply.

Manure for Corn.—Corn is a gross feeder, and fresh manure is acceptable to it. Where the sod has been top-dressed early in the spring, and the manure turned under with the vigorous growth of herbage, no better preparation can be made for this crop. Then after harrowing, a light dressing of some active artificial fertilizer, guano, blood-manure, fish scrap; or either of the special corn manures may be given broadcast, or in the hill. When the sod has not been previously fertilized, the manure, if coarse, may be spread upon it and plowed under, or, if fine, may be harrowed in. When no stable-manure can be had, a liberal dressing of

Artificial Manure, of some kind, should be used for the corn crop. It is very certain that an improved agriculture must be based upon the use of this kind of fertilizers; because, as we can not help taking something from the soil which, under the best system can not be returned to it, it becomes necessary for us to find something to replace the loss. This we may do by purchasing five or ten dollars worth per acre of artificial fertilizers, and gaining twenty or thirty dollars worth of extra product in the crop. Fertilizers, well applied, can be made to return their cost, and a hundred per cent profit; and this ought to be satisfactory.

How to Use Fertilizers.—Many chemical fertilizers are highly concentrated, and should not be brought into close contact with the seed. We are using several tons of these fertilizers the present season, and apply them in the following way:

About two-thirds is sown broadcast on the harrowed soil, and one stroke of the harrow is then given to mix soil and fertilizer together. The seed is then drilled, or planted, and the other third is then scattered evenly upon the surface. In this way a very thorough mixture is secured.

The Quantity to be Used.—After many experiments last season, we have fixed on 500 to 600 pounds per acre, where no other manure is used, and 200 to 300 when the soil does not need a full dose. It is not wise to half feed the soil, any more than to half feed an animal.

Choice, and Preparation of Seed.—No plant is more improved by choice of seed, and careful cultivation, than corn. For some hints on this subject, see article last month. To deter birds from pulling the seed, and cut-worms from nipping the sprouts, it has been found effective to roll the seed in pine-tar, and then in plaster. The scent of the tar will remain a long time, and will be disagreeable to the vermin. The tar can be most easily applied by mixing it with hot water and then stirring in the corn.

Top-dressing Fall Grain.—Grainfields that look unthrifty and yellow after the drying winds of the spring, will be benefited by a top-dressing of active fertilizer; this will help the clover and young grass.

Plaster is often very useful upon young clover-fields—frequently doubling the hay crop. Thus applied, it will serve to produce a good crop to be plowed in upon distant fields where manure can not be easily handled. One bushel (80 pounds), up to four, six, or eight bushels even, may be used to the acre as early as practicable this month.

Early Potatoes, that have not yet been planted, should be got in without delay. With this crop earliness is a great advantage where beetles abound.

Pure Paris Green is the best remedy for the beetle. Last season we mixed it with plaster, which is much cheaper than flour, does not scatter so much when the wind is blowing, and adheres to the leaves equally well. As it is best to be prepared for the beetle, a supply of the Paris green should be procured in readiness for his arrival.

Root Crops.—The article upon "Root Crops for Stock," given last month, may be very profitably read over again. Nothing can be added to it, except, perhaps, to say that where the drill culture there described is found difficult, very good results may be had from culture on the flat. On the whole, mangels are to be preferred to any other root, as they yield better, are more certain, are less troubled with the fly, and make excellent feed.

Horses.—Now, with hard work, teams require good care. Horses will come from the field in much better condition if they are protected from worry by the flies. The best protection is a thin sheet made to fit the neck, with holes for the ears, and to buckle under the throat, and to cover the back, hanging loosely at the sides to give access of air beneath. It should be held by a crupper band beneath the tail. Too much corn fed now, is apt to produce irritation of the skin, and make the animals restless. Cleanliness will be found a great comfort to them.

Sheep and Lambs.—The most profit from a sheep is to raise a lamb that will sell for more than the mother is worth. This can be easily done by caring well for the earliest lambs. A lamb, 90 days old, and well fattened, will often sell for ten dollars in the cities, and half that in country villages. A half-bred Cotswold lamb, fed now with a little mixed oatmeal and bran, and suckled by a native ewe, will make an excellent market lamb. Lambs now being fed should be protected from cold storms, and the ewes should have some extra feed.

Sheep Washing.—To wash the wool on the sheep's back is not a profitable practice. The wool is not half washed, and the difference in price will not pay for the loss of weight, to say nothing of the trouble and risk for both men and flock. If the sheep are kept reasonably clean, and the wool free from rubbish, it will be found better than having to wash them to get rid of unnecessary filth.

Tagging the Ewes should not be neglected; the wool should also be clipped from about the udder. Much disease in the lambs is undoubtedly caused by filth in the mother's wool.

Plaster on Clover.—"J. G. W., Bates Co., Mo. Plaster should be sown upon clover as soon as the growth is vigorous in spring—about the first week in May is the usual time. 80 to 200 pounds per acre is used.

Cows and Calves.—Caution should be exercised in turning cattle on to the fresh grass. Young stock are especially subject to disease from over-feeding with succulent herbage. Black leg, black-quarter, or carbuncular erysipelas, frequent at this season, is so caused. Where there is danger, a seton in the dewlap has been found effective to prevent it. To change the feed gradually, however, is the best preservative of the health. In-coming cows that have been well fed should be watched to prevent garget. To reduce the feed before calving, and to guard the cows against lying out during cold rains, will be safe. Every owner of a cow should possess a good book on the care of cattle. Dadd's "Cattle Doctor" will be found useful in this way.

Swine.—Pigs given a run at grass will do best. The orchard, sown to clover, might well be appropriated to them in part. The effect will be beneficial in two ways; the pigs will have good grazing, and many vermin will be destroyed. If the pigs gnaw the bark, wash the lower part of the trees with some thin mud mixed with cow-dung. A feeding coop, such as is described elsewhere, is useful for young pigs. In this, some milk in a shallow pan may be given them without disturbance from older ones.

Poultry.—Young chicks should now be coming forward. As a rule, those hatched this month, if of good breeds, will begin to lay early in the fall, and continuing through the winter will brood early next spring. The profit of feeding laying hens, when eggs are scarce, is obvious. The loss in feeding "dead heads" through the winter, to lay only when eggs are plenty and cheap, is apparent.

Feed Little and Often to young chicks. Cracked wheat, swollen with hot water, and fed warm, and occasionally mixed with some of the animal meal prepared by Bowker & Co., of Boston, will push them on very fast. One heaped teaspoonful is sufficient at one meal for a brood of a dozen chicks. We find a good place for a coop is beneath a plum or cherry tree. A curculio has no chance to escape their sharp eyes. If properly cared for, poultry ought to pay more profit than anything else on the farm—the garden excepted, perhaps.

Fodder Crops for early use are to be put in as soon as possible. Make a succession of sowings, that the crops may follow each other every ten days.

Oats and Peas, sown together, give a large yield of nutritious green fodder. If the ground is rich and clean, $2\frac{1}{2}$ bushels of oats and $1\frac{1}{2}$ bushel of peas may be sown on a well harrowed field, and covered with a small, shovel-toothed cultivator. A broad, leafy oat and large-growing pea are the best. We have found the "Side" or "Horse-mane" oats and the "Black Marrowfat Pea," best for abundant fodder. For early cutting, the small "Gray Canada" pea, sown with barley, may be substituted.—*Tares or Vetches*, and the "Mammoth Clover" are good fodder crops.

The main Planting for fodder should be corn. The Evergreen Sweet corn; the early Canada Dutton, King Phillip and other small-growing varieties are best. Plant with the Albany, or other planter, in rows 30 in. apart and close together in the row, using about 3 bush. of seed per acre. A fine fertilizer, such as guano, or one of the special corn manures, may be dropped along with the seed with the planter mentioned. If barn-yard manure is to be used, the drills may be opened with a plow, the manure scattered in the furrow and covered with the plow and the seed planted with the planter, or be sown by hand on the manure and covered by the plow. A grain-drill with only three spouts open may be used for sowing fodder-corn.

Poultry Manure.—This is a valuable fertilizer, and may be used with most benefit on corn. It may be scattered in the hill at planting or afterwards spread about the hill upon the surface. It is well to mix it with an equal bulk of plaster.

Notes on Orchard and Garden Work.

It is a common saying among cultivators that, no matter whether the spring is early or late, vegetation will be found the first of June to be about the same, taking one year with another. Still, near New

York, as we look from the windows of our country sanctum on April 15th, we feel very sure that we never saw the grass on the lawn so dark a green and needing cutting so much; we have never seen the pear-trees so nearly in full bloom, or the flowering-shrubs so far advanced as now, at any previous writing of the May Notes. This unusual season has made it necessary for us to look further ahead in preparing these Notes, and our often repeated suggestion to consult those of the previous two months, is enjoined with especial emphasis.

Orchard and Nursery.

Planting is generally finished before this time. Trees that have been properly heeled-in will be sufficiently retarded to allow them to be sent from the nurseries. Trees in transit in warm weather are liable to injuries; the methods of treating these were given last month.

Grafting is one of the operations that had better be done too late than too early. The proper time is when the swelling of the buds shows vegetation to be active, and it is risky to do it earlier. The most successful grafting of an orchard we ever saw, was done while the trees were in full bloom. At this season the bark slips readily, and care is required in sawing off the limbs, not to strip it and make a bad wound. It is better now, to quite cut through the bark with a strong knife all round where the saw is to work. Grafting-wax for use now should have more rosin in it, to make it harder, than that applied in cooler weather.

Buds below the Graft.—A gentleman about to graft informed us that he was advised by "a professional," to "scrape the branches," in order to remove every bud below the graft, and called to inquire as to the propriety of this. Whenever a bud starts into growth, the sap flows towards that bud. The buds on the cion are dormant, and will remain so until a union is formed with the stock, sufficient for that to supply the cion with sap to allow its buds to commence growth. If the stock or its branch is entirely deprived of buds, the sap has little inducement to ascend, but if the buds are left nearly up to the point where the grafts are inserted, their starting will cause an abundant supply of nutriment to flow to them, and the chances of the success of the grafts greatly increased. When the buds on the cions have commenced to grow—and not until then—the young shoots below are to be broken or rubbed off.

Insects will increase as the supply of food becomes abundant. Eggs of the *Tent Caterpillar* that have escaped observation, will now hatch, and the small caterpillars will commence to feed, making their webs, or "tents" while yet small; these are best seen while the dew is on them, in early morning. Lye, whitewash, petroleum, and other things have been advised, to be applied with a swab. The quickest, easiest, and surest way is to remove the web, morning or evening, when all are at home, by the hand—gloved or not—and throw it upon the ground and stamp it. *Lovers* in the apple and quince are detected by their saw-dust, and by a depression in the smooth bark, those in the peach and other stone-fruits by an exudation of gum. They must be cut out, or be probed and punched to death by means of a wire. *Curculio*, on stone-fruits generally, but on the plum particularly, begins work as soon as the fruit is set; jarring the tree, catching the insects on a cloth, and then killing them, is the only remedy. *Plant Lice* often cover the young shoots; strong soap-suds or tobacco-water will kill them; on low trees the branches may be bent down and dipped; on others the liquid must be freely applied by a syringe or garden-pump.

Young Trees should have the soil kept clean and mellow among them, and, especially if set this spring, should have a mulch before dry weather sets in. A tree properly planted rarely needs stakes, but if any are disposed to grow crooked, it is best to remedy this while they are young, and stake them.

Thinning of Fruit.—Those who practice this, should begin as soon as the crop is fairly set. Others may doubt its value, but no one who grows choice fruit for market can afford to neglect it. The experience of a single season with two trees,

side by side, will decide the matter. Let one tree ripen all the fruit that sets, and from the other remove three-fourths of the crop. Keep an account of the cost of thinning, and of the returns from the fruit from each tree.

The Black Rot is not confined to plum trees, but attacks cherries, and we have seen the same or something very similar on Nectarines. At its worst it is in the form of large black, ragged excrescences; it begins by a small swelling and breaking away of the bark. Cutting off and burning all affected branches is the proper remedy. When the excrescences are not large and few, cutting them out down to sound wood, and washing the wound with a solution of chloride of lime has been found useful.

The Blight comes without warning; we only know of it by the death of a branch, several branches, or sometimes of the whole tree. Cutting back to sound wood, if it takes the whole tree, and burning the prunings, is all that can be done.

Seed Beds of fruit and forest trees should be kept free of weeds, the soil loosened, and where the seedlings stand too close, thin them. Forest-tree seedlings, especially evergreens, must have shelter from the hot sun; a lattice of laths, or a screen of brush may be put over them, but supported in such a manner as to allow a free circulation of air.

Fruit Garden.

Mulching is of great benefit to a large share of the small fruits. A mulch, while it prevents evaporation and overheating the soil, allows the rains to pass through, and by preventing the beating of storms, keeps the soil mellow and porous. Because those who live near the coast often write of the benefits from using salt hay, many have an idea that this is the necessary material for a mulch. Whatever mechanically protects the soil, and meets the above-named conditions, may be used. Bog-hay, straw (always abundant in grain districts), corn-stalks, chips (sawdust is not advisable, as it breeds fungi,) spent tan-bark, litter from stables, and even small stones, have all been successfully used for the purpose.

Insects will be troublesome here. See Notes on Orchard, for insects attacking trees. Those peculiar to special fruits are treated under the proper head.

Strawberries.—The sooner the mulch is applied, the better; aside from its other uses, it is important in keeping the fruit clean. In some States, the harvest is over; in others, it is now at its height, while it is still anticipated elsewhere. Too much care can not be given to picking and pickers. We saw (April 15) a fine lot of South Carolina berries with their value diminished one-half because an over-ripe berry or two was in each basket. The further the distance the fruit is to be sent, the less ripe it should be. For near markets, the fruit is best picked into the baskets, and not again handled; but if to be *en route* for 24 hours or more, it should be picked in flat baskets, taken to a shady place to cool off, and then carefully assorted and put into the baskets or cups, taking care to put in not a single berry so ripe that it will soften and crush on the passage. The precise degree of ripeness can only be learned by experience, but it is safe to say, in general terms, that for a trip of 24 hours, no *full-colored* fruit should be packed.

The White Grub often makes sad work with strawberries, and their presence is not known until the mischief is done. When a strawberry plant wilts, take it up and search for the grub before it gets to and eats the roots from another plant.

Blackberries and Raspberries will now be making their growth of canes for next year's fruiting. Three or four canes are usually enough for each stool, all others are to be cut away. As soon as tall enough, tie them to the stake or trellis, and when they reach the desired height, stop them by pinching out the top. Three to four feet is enough for raspberries, and six or seven for blackberries. If rust appears, cut and burn the diseased stems.

Currants and Gooseberries.—No plants are more benefited by a mulch than these; very littery manure is excellent for them; it tends to prevent mildew, and greatly prolongs their season. The cur-

rant-worms must be taken in hand at their first appearance; the insect deposits its eggs on the under side of the lower leaves, and if a watch is kept for these, much trouble may be avoided by crushing the eggs. As soon as the leaves appear to be eaten, begin the war. *White Hellebore* is the efficient remedy. It is sold at the drug stores in fine powder. This may be sifted upon the bushes, but it is better to apply it with water. Put a table-spoonful of the powder into a bowl or other vessel, and pour on a little boiling water; thoroughly stir until the powder is all wetted, then add more boiling water, a quart or so, stirring to completely mix it; pour this into a pail, filling the pail with cold water. Apply this with a syringe or garden pump; in three days apply again; if more worms appear, repeat. Three applications are usually sufficient.

Grape Vines, in northern localities, at least, do not need a mulch; they do better with their roots in warm soil. Sufficient is said on the management of the vine at this time on page 182. As the shoots develop, there will often be found a caterpillar enrolled in the young leaves. It does less injury than may be supposed, though as it disfigures some of the leaves, it is well to remove it, which can only be done by hand picking. When the vine flowers, Rose-bugs will usually find it out, and gather upon the clusters. Early in the morning, while they are torpid, shake them off into a pan or other vessel containing water, and kill afterwards by scalding. Beetles and other large insects that appear later, must be hand-picked.

Training the Vine.—If one has only a few vines, it will pay him to train them in a regular manner, if the situation will allow, and to have Fuller's "Grape Culturist," or other good work, as a guide. Our remarks on page 182 apply to young vines. For fruiting vines, we may state a few general principles, applicable to all vines, however trained. The fruit is always borne on the shoots (see page 182) of the present year. The clusters of flowers, and afterwards fruit, appear opposite the lower leaves in the place of *tendrils*. There are usually three of these, rarely more than four. Market growers find that it pays to remove all but one or two bunches. When the shoot has made two or three leaves beyond the uppermost cluster, its further growth may be stopped by pinching off the end, though some prefer to leave four or more leaves. *Lateral*s will appear on these shoots, which are to be treated as directed on page 182. All barren shoots, unless wanted to supply canes for next year, and all shoots that appear where they are not wanted, are to be broken out as soon as they start. The young shoots are very brittle, and should be kept tied up to the wires of the trellis, if the vine is trained to one.

Kitchen and Market Garden.

In many localities it is the custom to move on the first of May, and those who are so unfortunate as to change their residence at this time, will begin their gardening rather late. This should not discourage them, as, with the exception of a few things, late sowing will generally give good crops, especially if there is water at command. Those who begin late will find many useful hints in these Notes for the past three months, and if in doubt about varieties, they may consult the list on page 62 in February last.

Succession Crops of spinach, radishes, etc., should be sown every 10 or 15 days, to keep up a supply.

Tender Vegetables, such as squashes, melons, and all of that family, beans, okra, etc., are to be sown at corn-planting time, when the soil is warm.

Buying Plants.—Those who have small gardens and have not much time, will find it cheaper to buy the few tomato, pepper, egg-plants, celery, and such other plants as they need, than to raise them.

Asparagus should be cut by a careful hand, who will not injure the plants. That for market should be bunched and kept in an upright position.

Beans.—For runners, set the poles first, in well-manured hills, 4 feet apart each way. Limas should not be planted until cold rains are over; put into the ground eye downwards, 4 or 5 beans to the hill,

Beets.—Thin the early-sown; the thinnings make excellent greens and are preferred by many to all others; sow the main crop—Long Blood is best.

Carrots.—Sow, using a plenty of seed, so that the plants may break the ground well.

Cabbages and Cauliflowers.—Set out from hot-beds as soon as the plants are well hardened, setting well down in the soil. Sow seeds for the late crops.

Celery.—Sow seed, if not already done, covering but lightly; roll or pat the surface down firmly with the back of the spade. The soil must be worked as soon as the rows can be seen; to assist in this, sow a few radish-seeds with the celery.

Corn.—Sow early sorts as soon as safe, and it is well to put in a little, in advance of the season, to take its chances. The drills may be 3 or 4 feet apart, according to the height of the variety.

Cucumbers and Melons.—Sow seeds and put out plants from hot-bed as soon as cold nights are over. Hand-lights are useful for these.

Egg-Plants are the last thing to go from a hot-bed. Set when the weather is warm. Look out for potato-beetles, which are very fond of these.

Horse-Radish is usually put between rows of early cabbages. Plant the sets 10 inches deep.

Kohlrabi.—Sow, and thin plants to 8 or 10 inches.

Lettuce transplant from hot-bed; sow for late crop.

Squashes.—Make well-enriched bills for the bush-sorts, 4 feet each way, and manure the whole ground for the later kinds with well manured hills 8 feet each way, using an abundance of seed.

Sweet Potatoes.—Put down well decomposed manure in rows 30 or 36 inches apart; with a garden plow turn a furrow towards it from each side, to form a ridge; afterwards finish up the ridges with hoe and rake. Plant the potato sets or slips on this ridge, 15 inches apart; open a deep hole with a dibble or mason's trowel, and put the set down so that several joints will be covered. If the soil is not fresh and moist, pour water into the holes, and let it soak away before setting the plants. The last week in May, or the first week in June, is early enough for the climate of New York City.

Tomatoes.—A light, warm soil gives the earliest crops, but the bearing lasts longer in a strong and rich one. In a garden, a trellis, or some kind of support, should be given the vines. Our past volumes give a number of devices. Brush, to keep the fruit from the earth, is better than nothing.

Weeds and Weeders.—As soon as the rows of seedlings can be seen, break the crust; this is especially necessary in soils that bake on the surface. An excellent implement for this and much other weeding is a rake with long, sharp teeth; this used when weeds are very small, allows of rapid and effective work; the sun disposes of the uprooted weeds by thousands. Another implement that we can commend to every gardener is the lance-headed hoe. We are not aware that the best form is on sale; we have ours made. The blade is a triangle of steel $4\frac{1}{2}$ in. long by $2\frac{1}{2}$ in. wide at base, and flat; a saw-plate will answer. This is riveted to an iron rod shaped like a goose-neck, of such a bend as will allow the blade to lie flat when the handle is erect; the rod is fastened into a common hoe handle. If the edges are kept sharp, an astonishing amount of work may be done with it.

Odds and Ends.—Do not delay brushing peas until they fall over....Slaked lime, or a mixture of unleached wood ashes and plaster (gypsum), should be kept at hand; it is not only a good fertilizer, but of great use on young cabbages, turnips, young plants of the squash family, and all others attacked by the flea-beetle, and other small insects....Hand-pick the first crop of potato-beetles on early potatoes, and be ready to give Paris green when the larvæ appear....Have a supply of seedlings of Sage, Thyme, and other sweet herbs, to occupy the land when other crops come off....Thinning is rarely done to excess; the earlier it is done after the plants are large enough to handle, the better; root crops should be at least as far apart as the average diameter of the roots, and more would be better....All vegetables to be sold should be sent to market in neat order; beets and

all roots, asparagus, rhubarb, etc., are to be washed and put in bunches.

Flower Garden and Lawn.

If a lawn must be started so late as this, it is advisable to use turf, if it can be procured. See last month on sowing grass seeds; it is well now to mix a quart or so of oats with each bushel of grass seed, that the oats may shade the young grass; the oats should be mown before they flower.

The *Lawn Mower* should be used on well established lawns once a week or ten days, until the drouths come, when the slower growth will require it less frequently.

Weeds in Lawns, if annuals, are soon killed by frequent mowing; thistles, docks, plautains, and other perennials, can be pulled, when small, if the ground is moist, or if too large, cut below the surface with a knife. A few children will soon clear them out at a little expense.

Bedding is usually of greenhouse tender plants, which should not be put out until cool nights are over, and they should have rich soil, that they may produce an effect as soon as possible. Most annuals used for bedding are hardier, but these need shelter, if cold winds come before they get established, by brush stuck amongst them.

*Cannas and Tuberose*s ought not to be put out until settled warm weather, and where this comes late, it is well to start them in boxes of earth in a greenhouse, frame, or sunny window.

Gladioluses are almost hardy. It is well to make two or three plantings at intervals of two weeks, to prolong the blooming season.

Dahlias are very tender, and are best started in a hot-bed, or in a sunny corner where they can be sheltered at night. Before planting a Dahlia, plant a stake, and keep it tied up as soon as tall enough to tie, else a wind will break the tender stem.

Evergreens are, according to some, likely to do better if transplanted just as the new growth starts; our experience is, that the important point is to never let the roots get dry; an exposure of an hour to drying winds will often place the roots in a condition past recovery. We can not too highly recommend the practice of *mulching* newly-planted Evergreens with stones. Place stones from the size of a cocoanut up to as large as one can conveniently lift all around the tree and over the roots; these will keep the roots moist, and anchor the tree better than any stakes; these trees offer great resistance to the wind, and are often bent in the direction of the prevailing gales, unless some such precaution is taken.

Climbers should be introduced wherever there is a proper place for them. A rough screen covered with annuals, such as Morning Glories, Canary Creeper, Thunbergias, etc., and with Maderia Vine, Maurandia, Cobæa, etc., may be made to shut out an unsightly object and be pleasing in itself. Sweet Peas should have been put in as soon as the ground was open; if sown now, put two or three inches deep; if no other method is better, stick them like garden peas; have a plenty for cut flowers.

Annuals started under glass, or in window-boxes, should be hardened off by gradual exposure, before putting them in the open ground.

Perennials of the later kind may be had of the dealers. Do not forget Chrysanthemums to make the garden bright until the last.

Roses require almost as much care, so far as insects go, as potatoes; but these are as essential in the flower garden as the potatoes in the kitchen garden. Begin with tobacco water for the Rose-louse or aphid; go for the slug with White Hellebore, as advised under Fruit Garden, for Currant Worms. When the Rose-bugs come, treat them as directed under Grape Vines.

Greenhouse and Window Plants.

The custom of completely clearing out the greenhouse is not so general as formerly. With proper attention to shade, and water, and insects, it may be kept attractive all summer. If one has

provided Gloxinias, Gesneras, and other summer bloomers, a grand show may be made.

Evergreen Plants, such as Camellias, Ardisias, and other broad-leaved sorts, must have partial shade, but not under the drip of trees; must be set upon coal ashes, so that worms will not enter the pots; must be placed where they will not be blown over; and must also be put where they will not be neglected if they need water, or other attention.

Fuchsias and Cactuses, the summer bloomers, make grand ornaments to a veranda, and they can have the needed shade and care. The Caeti, when making their growth, need water, however dry they may be kept when at rest.

Plunging Pots of plants may often be done with advantage to decorate the grounds. Put the rim of the pot just level with the ground and place a layer of coal ashes under the bottom to keep out worms.

Hanging Baskets often used on verandas dry out very rapidly, especially those of wire-work lined with moss. Every few days these should be placed in a pail or tub of water and soaked thoroughly.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending April 12th, 1878, and for the corresponding period last year:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 d's this m'th	271,000	3,102,000	1,113,000	293,000	387,000	496,000			
23 d's last m'th	313,000	3,804,000	1,516,000	91,500	569,000	403,000			
SALES.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 d's this m'th	326,000	3,491,000	3,105,000	412,000	563,000	619,000			
23 d's last m'th	339,000	3,912,000	3,238,000	243,000	551,000	526,000			
2. Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 days 1878.	271,000	3,102,000	1,413,000	293,000	387,000	496,000			
26 days 1877.	265,000	289,000	1,711,000	47,000	304,000	674,000			
SALES.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 days 1878.	326,000	3,491,000	3,105,000	412,000	563,000	619,000			
26 days 1877.	331,000	3,265,000	2,307,000	53,000	255,000	596,000			
3. Exports from New York, Jan. 1, to Apr. 17.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.	
1878.	770,100	12,898,746	5,232,029	94,966	1,133,912	56,564	145,351		
1877.	770,100	12,898,746	5,232,029	94,966	1,133,912	56,564	145,351		
1876.	569,514	4,994,177	3,668,938	43,330		63,894	258,251		

Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Peas.	Beans.	Butter.	
Apr. 15, 1878.	1,370,081	541,648	106,375	396,361	857,273	253,424			
Mar. 11, 1878.	1,639,371	420,484	114,260	660,145	1,090,987	275,705			
Jan. 11, 1878.	1,574,035	744,470	208,816	831,673	1,415,633	218,079			
Feb. 11, 1878.	2,536,715	105,929	286,333	913,898	1,687,985	321,474			
Dec. 11, 1877.	2,244,982	1,729,229	399,977	844,787	1,879,032	338,849			
Nov. 5, 1877.	384,374	2,643,502	166,649	368,429	1,770,759	328,388			
May 7, 1877.	761,686	468,809	193,016	174,375	317,831	291,654			
Feb. 7, 1877.	3,083,819	2,302,261	314,142	611,114	956,114	388,605			
Jan. 8, 1877.	3,668,010	3,077,704	341,750	905,615	1,083,104	425,406			
Dec. 11, 1876.	3,110,283	3,895,534	218,811	873,310	1,182,392	512,041			
Apr. 11, 1876.	3,938,074	232,140	68,429	200,381	706,282	436,942			
Jan. 10, 1876.	3,502,233	669,383	100,741	325,191	1,050,390	307,438			

Gold has been up to 101½, and down to 100¼, closing April 17, at 100¼, as against 100½ on March 12; 101½ on Feb. 12; 102½ on January 12; 103 on December 12; 102½ on Nov. 12; 103 on October 12; 105½ on July 12; 104½ on June 12; 107¼ on May 12; 105½ on April 12, of last year. An active business has been transacted in Breadstuffs, during the month, largely on export account, and in this connection, especially notable in Wheat, Corn, Rye, and Barley, with, toward the close, a considerable movement in No. 2 Chicago Oats for shipment to France. Prices of most articles in the Breadstuffs line, however, have fluctuated frequently, and widely, as influenced, mainly, by the tenor of the cable reports from Europe, as to the political position and outlook there. Speculation was stimulated early in the month by the warlike advices, but with the more peaceful aspect of the foreign situation, as represented later on, this feature measurably subsided. As we close this, the general market is irregular, and rather weak. The purchases of Rye for Germany and Holland reached unusual proportions. Provisions were quite freely dealt in, Hog products attracting most attention, largely on speculative account, but at very variable figures, leaving off, as a rule, heavily, under urgent offerings. Butter, Cheese, and Eggs receded in value, on liberal supplies and a moderate demand. Hops and Seeds were less sought after, and fell off materially. Wool was much depressed, and in comparatively limited demand, as well for manufacturing purposes as on trade account, closing in favor of buyers. Tobacco has been in less request, and quoted lower. Export movement light. Hay and Straw have been quite moderately dealt in, but, as a rule, quoted about steady. Ocean freights have been more active, but unsettled as to rates, leaving off weak. Grain rates by steam to Liverpool closed April 12th at 8d. (about 16 cents) per bushel; Glasgow, 8½d.; London, 8½d.; Bristol, 9d.; Hull, 8½d.; the Continent, 8½d. by rail to Liverpool, 6½d.; London, 7½d.; by steam to Liverpool, by steam, 2s. 9d. (about 66 cents

per bbl.); by rail at 2s. 3d.; London, 2s., and by steam, 3s.; Bristol, by steam, 3s., and sail, 1s. 10½d. per bbl. Provisions by steam to Liverpool, 30s. 35s. per ton. Cotton by rail 1½d. ¼d., and steam 7½d. ¼d. Grain, by rail, for Cork and orders, at 6s. 6d. 3d. per quarter, (8 bushels), and to Continental ports, 5s. 6d. 6s. 3d.; Italian ports, 5s. 6d. 6s.; and from Philadelphia for Cork and orders, 6s. 6d. 3d., and from Baltimore for Cork and orders, 6s. 6d. 6s. 9d., in bags, 15 15½ cts. per bushel.

CURRENT WHOLESALE PRICES.									
	Mar. 12.				Apr. 17.				
PRICE OF GOLD.	100 3-4.				100 3-8.				
Flour—Super to Extra State	\$4 10	@	5 50	\$4 15	@	5 60			
Super to Extra Southern	4 15	@	5 75	4 25	@	5 75			
Extra Western	4 45	@	5 50	4 50	@	5 90			
Extra Genesee	4 45	@	6 25	5 00	@	6 25			
Superfine Western	4 10	@	4 65	4 15	@	4 90			
Rye Flour, Superfine.	3 90	@	3 90	3 10	@	3 15			
CORN-MEAL.	2 50	@	3 10	2 25	@	3 15			
BUCKWHEAT FLOUR, 100 lbs	1 25	@	1 85	Nominal.					
WHEAT—All kinds of White.	1 35	@	1 41	1 25	@	1 46			
All kinds of Red and Amber.	1 00	@	1 36½	1 00	@	1 36			
CORN—Yellow	52	@	53	52	@	57			
Mixed	47	@	60	45	@	58			
White.	52	@	61	50	@	58			
OATS—Western	33	@	40	32	@	40			
State	35	@	41	33	@	40			
RYE	70	@	76	67	@	75			
BARLEY	48	@	55	49	@	55			
WHEAT MALT	60	@	1 20	65	@	1 20			
Hay—Bale, 100 lbs.	40	@	45	40	@	45			
STRAW, 100 lbs.	35	@	65	33	@	65			
COTTON—Middlings, 100 lb	11	@	11½	10½	@	10½			
HOPS—Crop of 1877, 100 lb	5	@	13	5	@	13			
old, 100 lb.	1	@	5	1	@	3			
FEATHERS—Live Geese, 100 lbs	35	@	47½	35	@	47½			
SEED—Clover, West, & State	8	@	8½	7	@	8½			
Timothy, 100 bush.	1 25	@	1 40	1 25	@	1 40			
Flax, 100 bush.	1 45	@	1 50	1 45	@	1 50			
SUGAR—Refined & Grocery 100 lb	6¼	@	8½	6¼	@	8½			
MOLASSES, Cuba, 100 gal.	20	@	35	26	@	38			
New Orleans, 100 gal.	22	@	48	30	@	52			
COFFEE—Rio (Gold)	14	@	17¼	13½	@	17			
Tobacco, Kentucky, &c., 100 lb	4	@	15	2½	@	14			
Seed Leaf, 100 lbs	4	@	50	4	@	50			
WOOL—Domestic Fleeces, 100 lbs	25	@	52	25	@	48			
Domestic, pulled, 100 lbs	28	@	40	20	@	36			
California, spring clip.	18	@	28	13	@	28			
California fall clip.	12	@	20	10	@	19			
TALLOW, 100 lb	7½	@	7½	7½	@	7½			
OIL—Coke—100 lb	30 00	@	31 00	30 00	@	31 50			
PORK—Mess, 100 barrel	10 00	@	10 25	9 75	@	10 25			
Extra Prime, 100 barrel	8 00	@	8 50	8 50	@	9 00			
BEER—Extra mass, 100 lb	12 00	@	12 50	12 00	@	12 25			
LARD, in tins, & 100 lb	7 25	@	7 65	6 75	@	7 35			
BUTTER—State, 100 lb	10	@	36	10	@	35			
Western, poor to fancy, 100 lb	10	@	38	8	@	36			
CHEESE	5	@	14	5	@	13½			
EGGS—Fresh, 100 dozen	10	@	15½	9	@	11			
POULTRY—Fowls, 100 lb	7	@	14	8	@	13			
Chickens, 100 lb	5	@	11	20	@	50			
Turkeys—100 lb	5	@	14	8	@	16			
Geese, 100 lb.	1 00	@	2 00	1 12½	@	2 00			
Ducks, 100 lb.	60	@	1 00	60	@	1 12			
Roosters, 100 lb.	5	@	6	5	@	20			
Ducks, Wild, 100 pair	30	@	2 25	20	@	1 50			
GROUSE, 100 lb	75	@	1 50	Nominal.					
PIGEONS, wild, West'n, 100 doz	1 00	@	2 00	1 12½	@	1 25			
SNIP, per doz	1 50	@	2 75	1 12½	@	1 25			
RABBITS, 100 pair.	20	@	25	Nominal.					
HARES, 100 pair.	20	@	25	Nominal.					
TURKISH, 100 bbl.	50	@	1 00	25	@	50			
CABBAGES—100	2 00	@	4 50	2 50	@	6 00			
Red	2 50	@	4 50	—	@	—			
ONIONS—100 lb	1 12½	@	1 87½	75	@	1 75			
Carrots, 100 lb	75	@	1 00	50	@	6 00			
CARROTS, 100 lb	75	@	1 00	50	@	75			
POTATOES, new, 100 bbl.	4 50	@	5 00	5 00	@	6 00			
POTATOES—old, 100 bbl.	1 25	@	1 87½	1 00	@	1 50			
SWEET POTATOES—100 bbl.	1 25	@	2 50	1 25	@	2 50			
BEETS, 100 lb	60	@	75	60	@	75			
Bermuda, 100 lb	75	@	1 00	75	@	1 50			
APPLES—100 barrel	3 00	@	5 50	2 50	@	4 50			
PEANUTS, domestic, 100 bush.	1 00	@	1 45	85	@	1 40			
STRAWBERRIES, 100 quart.	—	@	—	20	@	30			
CHERRYBERRIES—100 bbl.	7 00	@	9 00	6 50	@	8 50			
ORANGES, Florida, 100 bbl.	1 25	@	2 50	1 50	@	3 50			
PEACHES, new, 100 bush.	3 50	@	5 50	4 50	@	5 50			
PEAS—Canada, in bond, 100 bu	82	@	83	83	@	84			
green, 100 bush.	1 15	@	1 25	1 12½	@	—			
new, 100 bush.	—	@	—	1 25	@	2 25			
BRANS—100 bush.	1 45	@	2 50	1 25	@	2 35			
BROOM-CORN	4	@	7½	4	@	7½			
SPIRACH, 100 bbl.	1 50	@	2 50	1 00	@	2 50			
KALE, 100 lbs	1 00	@	1 25	75	@	1 00			
ASPARAGUS, 100 doz. buil.	45	@	75	40	@	75			
LETTUCE, 100 bbl.	—	@	—	3 50	@	5 50			
SQUASH, 100 bbl.	—	@	—	2 00	@	3 00			

Two Months More.

IMPORTANT.—The Publishers of the *American Agriculturist* employ no agents; the high cost of making the paper and its low subscription price do not admit of this. But they do offer something in the way of recognition, or remuneration, to friends who take the trouble to show the paper to those not acquainted with it, and receive and forward their subscriptions. This assists the Publishers, and is beneficial to those solicited to subscribe. The remuneration is given in the form of **highly useful and always valuable** articles, which are named and described in a Premium List, a copy of which is supplied to every one desiring it and not having it.—The articles offered are *first-class, and just as good as money*, though by special arrangements, and large wholesale cash purchases, they cost the Publishers less.

The list of Premiums is open to all until July 1st, when it will be **positively withdrawn**. There are therefore just **2 months more** in which those who have begun lists may fill them out. **New Lists** may be begun by **any one**. Those who have struck for a larger premium, and have not succeeded in getting that, may select a smaller article, and complete their list to get that one. There is

Plenty of Time Yet to fill out lists in progress, and to begin new lists, and complete them during May and June. (A lady begun the second week in May and procured subscribers enough within one month to secure free a \$650 Steinway Piano.—A farmer in three weeks secured a Buckeye Mower free in the same way, without neglecting his work; and many others have in like manner got large and valuable premiums in a short time in May and June.) There is a large list of good articles to select from, varying all the way from \$1 to \$650 in value, **given free**, for from 3 subscribers upwards.

Over **20,000 persons** have received these valuable premium articles **free of cost**. Reader, Try it this month. A little effort now will secure you one or more valuable articles the present season.



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, \$1.60 a year; Two Copies, \$3; Three Copies, \$4.20 (\$1.40 each); Four Copies, \$5.30 (\$1.30 each); Five to Nine Copies, \$1.25 each; Ten to Nineteen Copies, \$1.20 each; Twenty Copies and upwards, \$1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid. **Remittances**, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or any full year, sent unbound, for \$1.60. **Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of new subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator

and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings. Germans are a *reading, thinking* people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners; all would find it pay to do so.—*Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc.*, because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—*Please call the attention of your German neighbors to this paper.* It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

A Microscope for Every Subscriber.—Every subscriber to the *American Agriculturist* for 1878, is entitled to receive one of the *American Agriculturist* Microscopes, delivered free anywhere in the United States or Territories, on remitting 60 cents; or for 40 cents if the Microscope be taken at the office (Our arrangement for delivering them by Express at reduced rates has expired). The invariable price to non-subscribers is \$1.50, or \$1.65 if sent pre-paid. Even without the paper, it is, at \$1.65, far cheaper than any microscope of equal usefulness that was ever before offered. By new methods, and by making them on a scale twenty times greater than ever before attempted, the cost has been greatly reduced. These special advantages are reserved exclusively for the subscribers of this Journal for the present year; and by paying part of the cost themselves, the Publishers supply them at the nominal price above named.

Hundreds of Letters have been received since sending our April number to press, from Subscribers, expressing great satisfaction and pleasure in the use of the *American Agriculturist* Microscope. It could not be otherwise with any person who is acquainted with such instruments, or who, not being acquainted with them, will take a little pains to get familiar with the proper use of this one. To such it opens almost a new world of objects, and is a source of instruction as well as amusement, especially to the young. Although its continued distribution is a source of loss, we shall, for the present, continue the offer of these Microscopes, as hitherto, except the addition of 5 cents to the cost of delivery above named.—After our subscribers are supplied, they will probably be put into the regular trade at \$1.50 each, which is far cheaper than any microscope of like value and usefulness has ever before been offered.

Life Insurance.—Our views of the importance of this were given in March, page 86. The statement of another of the old substantial first-class companies will be found on page 200 of this paper. The figures speak for themselves. The terms, tables, etc., can be obtained without charge, from Mr. L. S. Goble, 137 Broadway, N. Y.

To Officers of State and County Fairs.—As the time is at hand when arrangements are to be made, and Premium Lists prepared for State, County, and other Agricultural, Horticultural, and Industrial Fairs, we would remind those who make up the schedules and prizes, that no more acceptable Premiums can be offered than some of the very useful and valuable Books for the Farm, Garden, and Household, or a year's subscription to the *American Agriculturist*. We invite correspondence from those who have these matters in charge. Premiums like those we suggest, have been offered in many cases, to the great satisfaction and benefit of those who secure them, and who place a greater value upon such permanent, useful keepsakes, than they would upon several times their cost in a money premium.

Crandall's "Chinese Blocks."—All children will remember Mr. C. M. Crandall with gratitude, as the man who has given them the means of unbounded delight. And now he comes again with a new "Block," combining the original Building Blocks with a Chinese Family, the various pieces being beautifully colored, and a single Set enabling its fortunate owner to build, without number, Chinese Houses, Palaces, Pagodas, etc., etc. See Third Cover Page.

Cuba, and "Crandall's Heavy Artillery."—An American, who has resided for some years in Cuba, last fall visited his father, who lives in this country. When he returned some weeks later, he took with him a set of "Crandall's Heavy Artillery,"—a most fascinating toy of its kind, which is to be found in toy stores almost everywhere. When his baggage was examined by the Custom House officials in Cuba, this innocent, though formidable looking affair was found, and the sharp-eyed officials, concluding it was some new engine of destruction, designed for the use of the insur-

gents, threw its owner into prison. His confinement, which lasted seven weeks, brought on a fever, and he lost his hair in consequence. The U. S. Consul at last procured his release, and one of the too hasty Custom House men was discharged. Our unfortunate American, however, soon learned that a plot had been laid to assassinate him, and he fled the country, being now safe at home.—*Moral.*—Everybody should buy this remarkable and interesting toy, which can be had for \$3.00 at this office. Expressage to be paid by recipient.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price, and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy* information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

The Death of Clarkson Taber is announced as having occurred at his farm in Sterling, Kansas. The account is very meagre, and the date is not given, but we suppose it took place about the middle of April. Mr. Taber was born at Albion, Me., in 1822, and was educated at the Friends' School, at Providence, R. I. In his early life he was engaged in the nursery business, and he had an excellent knowledge of that branch of horticulture. He became connected with the *American Agriculturist* in those primitive days when one person could do all the mailing, attend to the advertising, besides making himself generally useful; later, he made up the cattle reports, and afterwards performed similar duties for the "N. Y. Tribune." Mr. Taber was a faithful, industrious worker; he was a consistent member of the Society of Friends, and was highly esteemed by all who knew him. To his old associates this unexpected news of his death brings sincere regret, but awakens none except pleasant remembrances of a genial intercourse of many years.

Coloring Butter.—As long as the demand exists for high-colored butter, and consumers will pay an extra price for it, so long dairymen will color their product. Some people love to believe that Jersey cows *always* yield very yellow butter. Ordinarily they do, but sometimes even the best Jersey butter is colored artificially. If butter is to be colored, it were well that it were well done; and it cannot be well done without a good coloring preparation. We have tried several preparations, for when our butter in the winter season lacks color, we do not hesitate to please our own taste as well as those to whom we sell, by giving it the right tinge artificially. Of the colorings we have used we prefer two; that prepared with oil, by Mrs. B. Smith, Philadelphia, and that of Wells, Richardson and Co., of Burlington, Vt., which is a popular liquid coloring prepared in a different manner. There probably are others as good perhaps, but these are good enough to produce a lemon or a golden yellow as may be desired.

Don't Pull out Loose Teeth.—As soon as a tooth appears a little loosened, there is always an itching, among young people especially, to get the thing out. While artificial teeth are made very perfect, and are exceedingly useful, any natural tooth that is not damaged so as to ache incurably, is worth a score of the best artificial dentures ever made, and great care should be taken to keep it in as long as possible. Some months ago the writer had two front teeth so loose that they could be readily moved back and forward more than their diameter, by a slight pressure with the finger. But by a little care not to use them on hard substances for a few days, and keeping them pressed into place with the teeth opposite, they settled back into their natural position, and are now serviceable, thus saving two ugly gaps, or the expense and annoyance of artificial ones, and the annoying mouth-plates. Recent experiments by Dr. Kingsley and others show that the teeth may be "moved along," may be made to change their position very greatly, so as to get a regular set of natural teeth out of one previously more irregular than a Virginia fence. In a case under our own observation, the upper jaw was full of teeth, and had two extra ones that grew in front of two others—real "tusks." Yet the dentist spread the roof of the mouth by ingenious plates, screws, etc., and actually moved the other teeth along, bringing the extra fellows into line, and now there is a regular row of useful

teeth, where formerly it seemed as if the young man (now in College) had got to wear through life a very uncouth, distorted set of dentals.

Books Upon Poultry Raising.—

"W. G. L.," Ford Co., Ill. A very useful and cheap book upon poultry raising is "An Egg Farm, etc.," by H. H. Stoddard, who is a practical poultry breeder. It contains selections and illustrations from the back volumes of the *American Agriculturist* from articles written by Mr. Stoddard and those editors of the *American Agriculturist*, who have been largely and successfully engaged in raising poultry. It must not be expected that any book whatever can provide for every contingency and accident; judgment and common sense must be used when the directions given do not precisely meet any particular case. Only general rules can be given in books. Sent by mail in paper covers, 50c.; in cloth, 75c.

A Business Change.—

Mr. W. Atlee Burpee has retired from the firm of Benson, Burpee & Co., 223 Church Street, Phila., dealers in seeds, grains, and live-stock. The business will be continued at same location, under the firm name of Benson, Manle & Co. W. Atlee Burpee & Co. will conduct a similar business at 221 Church Street, Phila. Mr. B. is an enterprising, intelligent business man, and deserves success.

A Hay Fork Carriage.—"H. D. M."

The first necessity for the return of a MSS. is to send your post-office address. When a letter is dated only, and no place given, it is a clear impossibility to communicate by mail, although a stamp may be enclosed. Some people are very thoughtless in this regard, and blame us for what we can not possibly help. The drawing is received, and is only waiting for an opportunity to be published. It is not always possible to print any article the day or even month after it is received.

"Forestry and Its Needs," is the

title of an address, delivered before the "American Forestry Association," at the meeting held at Washington in February last, by its President, Doct. John A. Warder. It is brief but comprehensive, and shows that much careful thought has been given to the needs of our "forestry,"—if we can be said to have any in the proper sense of the term. We read to the very next to the last page, giving assent as we went along—feeling that here is a forestry movement which is not pivoted upon, and does not revolve upon the central idea, that the Government must send some one to Europe to examine and report—but, alas, here was the same old story, somebody must go to Europe. The suggestion that immediately precedes this is an admirable one, and would accomplish much good, viz., to introduce some of the many educated and trained foresters so numerous abroad, to teach in our scientific schools.

The Trial of Steam Engines for

farm uses, held at Syracuse last fall, under the direction of the N. Y. State Agricultural Society, was a very thorough one. Among the premiums then awarded was one of a gold medal to B. W. Payne & Sons, Corning, N. Y., for the best engine in the Second Class, *i. e.*, under 6-horse power. All the vertical engines made at their establishment are provided with "Taber's Patent Automatic Cut-off Governor," which, it is claimed, allows of the best control over the movements of the engine.

Sewing Machines.—

Over 20 years ago the *American Agriculturist* published the first popular description of "HOW SEWING IS DONE BY MACHINERY," showing by a variety of illustrative engravings just how the stitches were made by the leading machines, and setting the matter forth so plainly that ordinary persons could understand the whole process. This was in February, 1858. We have, from the first, recognized the importance of this labor-saving implement, and not only labor saving, but life and health-saving; and have many times urged every man to spare his companion the everlasting "Stitch, stitch, stitch! Sewing at once with a double thread, A shroud as well as a shirt," and advised selling an acre of land, if necessary, to secure this important aid in the household. Of course we have watched the progress of improvement, and have tried a majority of the machines brought out. So much by way of introduction to what we have to say of the New "Automatic" Machine of the WILLCOX & GIBBS COMPANY. One of these has been in use at home during three months past, by the same hands that have tested so many of the machines, from time to time spoken of in this Journal. It may be said in brief, that, all things considered, this is "The Best" one yet tried. Its elastic seam, easily fastened, and yet capable of removal when desired, is an excellent feature. It has sundry attachments, that work admirably, as the Hemmer, Tucker, Quilter, Ruffer, Braider, etc. It runs with wonderful ease and quietness. But the great improvement is the new "Automatic Tension,"

which is perfection itself. With this, the most inexperienced can sew the thinnest fabric as well as the thickest; and what is more, pass from one thickness directly to another, as often as desired, without changing the tension, and with the certainty of producing perfect work. Every lady who has used any machine and worried, and even cried, over getting the tension always right, will at once recognize the importance and value of such an improvement in sewing mechanism.

Relating to Shepherding.—"D. H.,"

Chicago, Ill. Stewart's "American Shepherd's Manual," gives full instruction for earing for sheep; all that is necessary in addition to what is there told, is some ordinary common sense, to apply it to differing circumstances. Kansas and Nebraska are good localities for keeping sheep. There a homestead can be bought cheaply, or taken on Government land for next to nothing, and for the present plenty of free pasturage can be procured. Probably the best plan would be to purchase 640 acres of cheap land from one of the railroads, and enter 160 acres of Government land, at \$1.50 per acre, adjoining it. This would give 800 acres, which would furnish winter feeding for three or four thousand sheep, and summer pasture could be had on the range. Either native or half-bred sheep could be purchased in Colorado at \$2 to \$2.50 per head. There is no necessity to purchase more land at present than sufficient for winter pasture, as plenty of wild hay can be put up for one or two dollars a ton. Price, sent by mail from this office, \$1.50.

German Millet.—"E. J. S.,"

Queenstown, Md. Millet can not be sown safely until the soil is warm. It thrives in warm weather. May and June are the months for sowing it. One to two pecks per acre will be sufficient seed.

Bean Planter.—"H. C. P.,"

Kinston, N. C. The Albany Corn Planter, made by R. H. Aden & Co., and illustrated in the *American Agriculturist*, April, 1877, plants beans as well as corn, and other seed. Any threshing machine will thresh beans, by putting a smooth plank in place of the concave, and running slowly.

Nebraska.—

Mr. Leavitt Burnham, the new Land Commissioner of the Union Pacific Railroad Company, has for many years been a resident of Nebraska. He is familiar with the country, and those who contemplate moving westward would do well to consult him. We learn that there is an unprecedented emigration this spring to that portion of Nebraska through which the Union Pacific road runs.

Capons.—"N. F.,"

Pieton Co., N. S.—A capon is an emasculated male of the ordinary fowl. The operation has the effect of greatly increasing the size of the bird and the tenderness and flavor of its flesh. It is very easily performed when one knows how. The instruments are kept for sale by H. H. Stoddard, of Hartford, Conn., who can also furnish directions for operating. It is one of those cases in which seeing the operation is of greater value than all the directions that can be printed.

"Economic Tree Planting" is the

title of a pamphlet by B. G. Northrup, LL. D., Superintendent of Public Schools in Connecticut. Dr. Northrup is an enthusiastic advocate of village improvement, and has done much to organize "Village Improvement Associations," the good done by one of which, that of Litchfield, was described in Feb. last. The present work is a report to the State Board of Agriculture of his observations in Europe, on the economical aspect of tree planting, with added evidence of examples in this country. The work reaches us just at the moment of going to press, and we can at this time only briefly announce it. It will be supplied by the publishers of this Journal, and by mail for 25 cents.

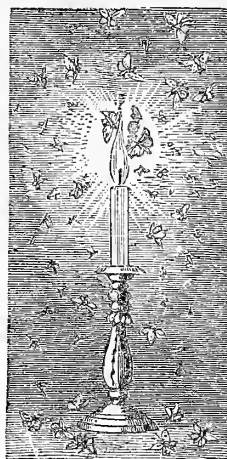
Malt for Feed.—"J. A. McD.,"

Kiugs Co., P. E. I. Malt is eagerly eaten by all kinds of live stock, on account of its sweetness; but the result of many careful experiments has shown that the benefits derived from feeding it do not repay the trouble and cost in malting the grain. Every advantage from the malting may be gained by simply adding a little molasses to the fodder or grain, and this is much cheaper. In malting grain, there is a loss of substance, as well as a change of its form in germination, and this reduces the actual value of the grain, although it renders it more palatable.

Butter Table.—"H. K.,"

Blair Co., Pa. The butter table illustrated in March is not made for sale; any carpenter can make it from the description given. The moulds can also be made by any good mechanic. Most of the articles described and illustrated in the *Am. Agriculturist* are designed purposely for it, are unpatented, and are so simple and exactly described as to be easily made by any one who can use tools.

Sundry Humbugs.



We have often referred to the "Butter Compound," and the difficulty of getting direct information concerning it. This we consider one of the most pernicious of the swindles of the present day, as it is a fraud upon those who may use it, ignorantly and in good faith, and a fraud upon those who purchase, as butter, the stuff produced by its use. In view of its importance, we give in a separate article the results obtained by the Trustees of the "Mass. Society for the Improvement of Agriculture," and presume that they will in due time furnish the public the details in full.....Last

month, we gave a considerable space to an account of the operations of a firm calling itself

"CLARK & CO., ADJUSTERS OF CLAIMS, ETC.,"

who pretended to have money to the credit of various parties, and who, to be sure that they were addressing the right parties, enclosed a slip containing a signature for identification. One would suppose, from the account there given, that the scheme had been completely squelched. But these things have as many heads as Hydra, and as many names as a confidence-man, and while as "Clark & Co., 1,267 Broadway" that head is cut off, it already appears in another form. Precisely such letters as the one quoted last month, from Clark & Co.,—word for word—are being sent out right and left, but they are headed and signed, instead of "Clark & Co.," "J. C. Keys & Co.," and no longer from 1,267 Broadway, but are dated at "37 Bond St." Now 37 Bond street is the place where not long ago the celebrated firm of Russell & Co. were supposed to deliver those magnificent prizes of watches and jewelry from that "Decision at Last" Lottery Combination. Can it be that Russell & Co. have retired, or can one small number—37—hold two such firms as J. C. Keys & Co. and Russell & Co. at once? This last move more than confirms the opinion of that shrewd officer, Special Agent Sherrett, as quoted last month, that the Silver Mining Co., so flourishing last year, Russell & Co., and Clark & Co., were all schemes of Elias; evidently, Keys & Co. is but another alias of Elias. By the way, Keys & Co. do their business thoroughly, as we have two letters of the same date and exactly alike sent to the same person! Of course, when Keys & Co. are denied the use of the mails, as were Clark & Co., the check will be but temporary; as soon as some other name can be engraved on the letter-heads, the same thing will turn up in another form. Fortunately it is a scheme which will catch only those who are dishonest themselves....Circulars concerning a

WONDERFUL GOLD MINE,

are being circulated freely. They are sent far and near with an introductory note to the recipient which reads:

"Dear Sir—Returning from the mines, we met a gentleman in the cars from your locality, and asked him to give us the names of persons who might take an interest in mining. Therefore we send a prospectus, etc."

It is really astonishing how many people "we" met in the cars. The whole thing is "too thin"....We still receive inquiries concerning those parties whose circulars offer great inducements to invest in

STOCK OPERATIONS IN WALL STREET.

In all the many cases we have inquired into, the parties sending out these circulars are not members of the Stock Board, and they are not known at all, or are unfavorably known, among the regular dealers on the street. Our advice to every one who does not understand the business, is to keep out of the stock-market, whether in person or by proxy....There seems to be

A NEW CROP OF LOTTERIES,

at least, new in name, and we are often inquired of concerning them. We have very frequently given our opinion of lotteries, but as many new subscribers have been added since we have said anything about them, we state, in brief, that we are opposed to the whole of them, as wrong in principle and injurious to the community. Very few are honestly conducted, and if any are so, the chances are fearfully against the ticket holder. In most States the sale of lottery tickets is prohibited by law, and if, as they often are, tickets are sold in defiance of law, the purchaser is accessory to an illegal act. Never mind where the lottery is held, by what name it is called, or who give it countenance—let it alone....Every now and then the old story turns up in one form or another, that a farmer finds he has a note to pay

world, comes very near it; Mr. R. S. Emory, of Chester-town, Md., who would be a great peach grower he not a greater pear grower; Mr. T. W. Skirven, also of Maryland, and others from that State, with several from Delaware, including Mr. R. M. Cooper, a large grower in southern Delaware. Besides this, Mr. Peters has personally visited and made careful examination in many of the large orchards, and is better able to form an accurate opinion thereon, than, probably, any other person. The cold snap, to which the wide destruction is attributed, occurred on March 27th, when the mercury went down to 16°. At this time the trees in many parts of the peninsula were coming into bloom very freely; fortunately it was then and had been for nearly two weeks, exceedingly dry, a condition which Mr. P. thinks very favorable for the trees. He finds that in many localities, especially in the lower Eastern Shore of Maryland, and southern part of Delaware, the finer varieties of yellow peaches, such as Crawford's Early and Late, Reeves' Favorite, Susquehanna, and others, are badly damaged, while the white-fleshed varieties are but little injured. In the more northern localities the damage is not extensive. The foregoing is condensed from Mr. Peters' very full report, in which he sums up his own observations and the information he has received from others, by saying: "The prospect now is that we shall have more peaches than can be profitably shipped—provided, of course, that nothing happens to them after this date." The crops of all other fruits, including the small fruits, promise to be unusually fine.

Basket Items continued on page 193.

Between New Zealand and New York.

A large share of our correspondents in this country request us "not to give their names" in the replies in "Our Basket." Such a request seems strange, coming from New Zealand, yet there is quite as much reason for it, if not more, as in some districts at home. It implies that the *American Agriculturist* is so generally read in the writer's neighborhood, that every one will know that he has written. Many try all possible methods to get their names in print, while the majority prefer not to see it; then persons do not like to have their neighbors know that they have written anywhere for information, especially to a paper. The fact is, this paper has so large a circulation in the British Colonies generally, that it would astonish the reader should we give the figures, while the numbers, and their constant and rapid increase in New Zealand and Australia, are a wonder to the publishers, who are generally not astonished at anything in the way of circulation. We have our own notions as to the reason for our large circulation in these colonies, obtained without effort, and increasing by its own momentum; but we will not give them now. Suffice it to say that we are exceedingly glad to find a welcome among the wide-awake enterprising farmers and others in those colonies—for they were not settled by those who could not stay at home, and we read with no little satisfaction, in a recent letter, that there was not a farm-house in a certain district, naming it, and giving its extent, at which the *American Agriculturist* was not taken. In view of all this, we have been surprised that so few questions came from those colonies; with the exception of some, which, from their nature, required a reply by letter, they have been surprisingly few. We are glad of our present correspondent's, "L. W.'s," letter, as, besides allowing us to be of use to other New Zealanders in our reply, it permits us to say to him and others there, and in the other colonies, that he has not "taken too much liberty in addressing this note to you" (us), and that we welcome him and all others with their questions, assuring them that they will be treated "on the terms of the most favored nations," including that called the "Universal Yankee." We do not promise to answer every one—that is simply impossible—for we are often asked to answer the unanswerable—but we will so far as we can, so soon as we can, reply, if we can. We are glad to see that our friend asks for a reply in "Our Basket," as that shows him to feel at home in "the family," and accept that friendly relation which we desire to encourage. With this, for us, unusually long preface, but as it will have to be shared by thousands besides himself, will not leave him so very much, we will to the business of his note. He asks 1st. "By what means are small sums of money sent—i. e., sums less than £1 sterling—between New Zealand and New York?"...2d. "What is book postage from New York to this colony?"...3d. "Is there any duty on agricultural machinery made in the U. S., leaving New York to come to New Zealand, and if so, how much?"...4th. "I have applied to shipping agents to learn the R. R. freight of goods from New York to San Francisco, but can get no information."—Answers.—1st. Money Order on London, or Draft... 2nd. 4c. for 4 oz. or fractional part; if 4½ to 8 ounces, 8 cts....3rd. No duty on Agricultural machinery,

simply a clearance fee through the Custom House.... 4th. \$2.50 to \$3.00 per 100 lbs. on agricultural implements, the rates changing nearly every month.

Diphtheria and Filth.

Not long ago there occurred at Newport, R. I., the deaths of six persons in a family of eight, within fifteen days, all dying of malignant diphtheria. So remarkable an invasion of a dangerous disease naturally aroused the attention of the authorities, and the Mayor of Newport, properly employed Col. Geo. E. Waring, Jr., as Sanitary Engineer, to examine and report upon the condition of the premises. From this report we learn that the cottage is healthfully situated, with a cellar under all of the main portion, but there is a small addition, one story high, outside of the main foundation; this is used as a rear entrance, and contains a sink and a water-closet; and is only separated from the rest of the house by a thin board partition. The sink, in frequent use, had an imperfect trap, and this and the water-closet emptied into a cesspool which had not been cleaned out for several years. All of this was had enough, but this addition, or scullery, was raised upon brick piers, about two feet above the surface of the ground, with the space beneath closely boarded. In this space was the leaden pipe from the water closet, connecting with an earthenware pipe leading to the cesspool. Sea-weed had been at some time used around these pipes to keep them from freezing. The examination showed that, through some cause, whether by frost, corrosion, or the gnawing of rats, the lower bend of the leaden pipe, leading from the water-closet, and which was intended to serve as a trap, had broken through, and the deposits of the water-closet, instead of being carried off, in good part oozed through the hole in the pipe, and spread themselves over the soil and sea-weed, under this addition, for the extent of a square yard or more. How this state of affairs could have existed and not aroused attention, it is not necessary to discuss.—This is what was found; six children are dead, and it is no stretch of the probabilities to connect the one with the other. It is not offensive matter of this kind alone that is to be found near houses, in both city and country. Many a house with a fine front yard has a faulty kitchen drain. Nor is diphtheria the only disease that is favored by such conditions: typhoid and other fevers may be directly traced to the want of proper care in carrying off the wastes of the house—too often country-bonuses. The case of this Newport family is a distressing one, but if it will arouse a general attention, all over the country, to this matter of house draining, and this shall lead to remedying all defects in the disposal of the waste materials, the calamity will not have been in vain.

Bee Notes for May.

BY L. C. ROOT, MOHAWK, N. Y.

As the spring promises to be unusually early, in this latitude, at least, bees will undoubtedly be placed upon their summer stands during April.

The work for the present month is to secure as rapid breeding as possible, that all swarms may become populous. Be sure that each swarm has a good laying queen. With the movable comb-hive, this may be readily ascertained by lifting out a frame, when, if eggs are found in the cells, it is satisfactory proof that the swarm has a queen. With the ordinary box-hive it is more difficult to make this examination, yet with the use of the smoker, it may usually be done. Turn the hive you desire to examine, bottom up. Spread the combs a little apart at the

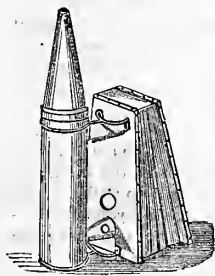


Fig. 1.—SMOKER.

center of the hive, and direct the smoke from the smoker to the exact point you desire to examine, thus clearing it of bees. If cells of sealed brood can be seen, it indicates that the queen is present. If sufficient honey is not gathered to continue breeding, sugar, syrup, or diluted honey, should be furnished for the purpose. If weak or queenless swarms are found, they should be united. Often two weak swarms may be united, making one good one, when both would be lost, if left separate. In uniting swarms, the smoker should be used freely, that all bees may become thoroughly demoralized. If sufficient smoke is used, there is usually little danger of their stinging each other.

Smokers.

The importance of some efficient mode of applying smoke in handling bees, is admitted by all practical beekeepers; while the Quinby Smoker, which has been described in these columns, has proved successful, there were some deficiencies in it, which experience has

remedied. During the past winter it has been much improved, so that it operates most perfectly. Figure 1 gives an accurate idea of what we call the *New Quinby Smoker*.

Section Boxes.

In Notes for March, 1877, I described a desirable form of the two-comb honey-box. The most popular box at

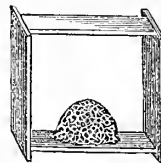


Fig. 2.—BOX.

present, in most markets, is a single-comb, or section-box. The one I use is made of white bass-wood, as follows:—Cut two pieces 5¼-in. long, 2 in. wide, and ½-in. thick, and two pieces 5 in. long, 1½ in. wide, and ¼-in. thick. Nail them together, as shown in figure 2, with ¾-in. cigar-box nails. This makes a box 5¼ in. square outside. The two wide pieces project over the narrower ones ½-in. on each side, giving room for the glass to rest on the narrow pieces. They should not be glazed until after they are filled. It will be seen that, by placing two or more boxes together, that there will be an opening ¼-in. wide between the boxes, where the bees may enter. A temporary separator, made of tin, or thin wood, should be placed between the boxes while they are being filled, to secure straight combs. A space ¾-in. wide should be left at the top and bottom of the separator to allow the bees to pass from one box to another, or they may be cut ½-in. smaller, on all sides, and attached to the sides

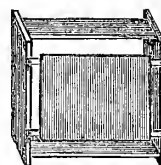


Fig. 3.—BOX.

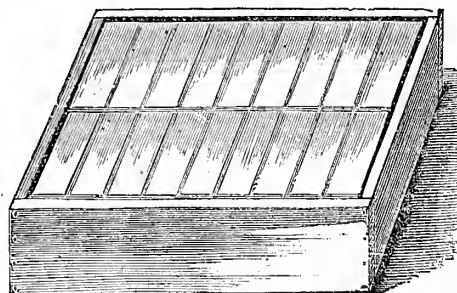


Fig. 4.—BOXES IN CLAMP.

of the box, by narrow strips of tin, as shown in figure 3. The boxes may be arranged in a clamp, as shown in figure 4, if used on the top of the frames, and if placed at the sides of the combs, they may be arranged in frames, as indicated in figure 5. The separators should be on the side of the box next the combs, and the other side closed

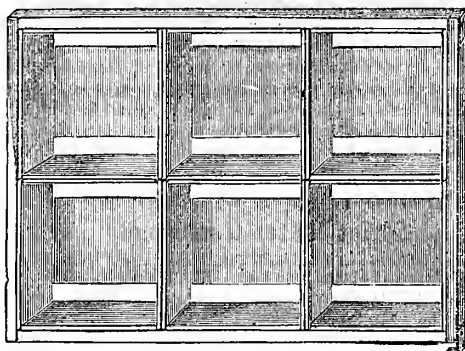


Fig. 5.—BOXES IN FRAME.

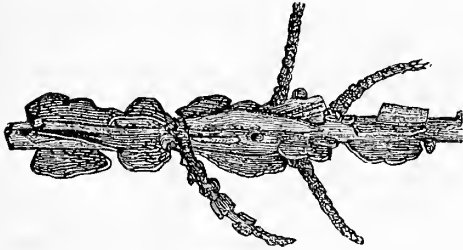
with a close-fitting division-board, or glass. Each box should contain a guide-comb, as shown in figure 2. This should be fastened in with white glue.

Weight of Bees.

No. 1 consumed during March, 1 lb.; No. 2. 2¼ lbs.; No. 3. 3¼ lbs.; No. 4, which was out-of-doors, had been robbing, and had not lost any in weight.

A Small Street Swindle.—The "Alligator Plant."—Those traversing the New York streets during April, saw at the corners of the streets, near the ferries, and at other central places, overgrown boys and men, each with a pile of rough-looking sticks, calling on, "Here they are; a few more left. The genuine *Alligator Plant* from Florida. You have only to put it in water, and in a week it will be covered with beautiful flowers like roses. Only a few left! Who takes the next at 25 cents." (the price later was 10c., 5c., or less.) These sticks or twigs, one to three feet long, were uncouth enough in appearance to have come from the alligator swamps of Florida, but they only came from the nearby swamps of New Jersey. They were the small branches of the common "Liquidambar," or "Sweet

Gum" (*Liquidambar styraciflua*), common enough in New Jersey, and still to be found in the few remaining pieces of woods in the upper part of the city itself. It is a peculiarity of this tree that its young branches bear corky wings, often as broad as the diameter of the stem itself. The engraving, much reduced in size, shows the appearance of a bit of one of these "Alligator Plants." Many cart-loads of them have been sold in the city, and a large lot had been sent to Philadelphia. The sale began at 25 cents each, but the market closed lower, "in favor of purchasers," as the reporters have it. That large quantities have been sold, is shown by seeing the branches placed in water in the windows of restaurants, barber's shops, and such places, as well as by the number of people one meets carefully carrying their "Alligator Plants" home. To those who do not



TWIG OF THE SO-CALLED "ALLIGATOR PLANT."

know the tree we may say that, as to habit and foliage, which is star-shaped, it is one of the most beautiful of our native forest trees, but the flowers are no more like roses than are those of the Button-ball. They are very inconspicuous, the staminate or sterile flowers in little conical clusters, the pistillate in small globular heads; they have no petals or showy parts, and one unfamiliar with such matters, might not even notice the flowers on a tree in full bloom. Whether these poor flowers will be produced in water, we doubt. At any rate they are so unlike what are popularly known as *flowers*, that those who have been watching for them will be greatly disappointed, should they be produced. We noticed this "Alligator Plant" swindle when it began with a single vender, several years ago. That these branches should be sold to city people, is not strange, but when we see several persons on a ferry boat going to New Jersey, where the twigs came from, and to Long Island, where, if we mistake not, it is not rare, we wonder what these grown men have been doing with their eyes all these years, not to know the branches of the "Bilsted," the name often given to it in New Jersey and around New York. Becoming disgusted with the extent of the swindle, which, though small upon each person, was very large in the aggregate, we wrote a full explanation to Mayor Ely, who courteously replied that he had put it in the hands of the Chief of Police, and as we have since seen no more of the plants offered, we suppose it was stopped by the proper authorities. Those who may be disposed to try the sale next spring are hereby notified that we shall be on hand to "nip it in the bud." The Mayor of Philadelphia will do well to note this item, for though the *American Agriculturist* circulates very largely in and about that city, there are there, as here, still some hundreds of thousands of people who have not got the guardianship of this Journal against humbugs, large and small.

That Butter Compound.

We knew it several years ago. It was in Ohio, and was called the "Golden Butter Compound," and was put forth, being in the "Buckeye State," by a "Bnekeye Co." in a small town in Ohio. After much circumspection, we obtained a sample, but not in such a manner that we could trace it direct to any particular person or "Co." Just then it turned up in Hartford, Conn., and we thought we were sure of it. The friend who kindly undertook to "interview" the "Butter Compound" chap was very faithful to his task; he went to the place and found an office "with a hole in the door" for letters, but our friend could never find the "Butter Compound" chap in. After a while, the "Butter Compound" turned up in Massachusetts. Then we said to ourselves, "the chap has reached his jumping-off place. He is where they don't stand any such nonsense. He is in the land of 'Milk-Cows and Dairy-Farming,' where butter, at less than \$1 a pound, has no sort of chance, beside the gilt-edged," and we were sure that that one offering to produce the "best of butter," and that at "a cost per pound never exceeding four cents," would either be suddenly squelched, or companies would be formed on State St., only less rapidly than they were in the days of the Lake Superior mining times, and this butter-business he put upon a regular square-toed basis. But we heard of no movement in Boston to make butter "at a cost per pound which never exceeds but four cents," and supply the world, nor did we hear of any movement to show up the matter. Knowing that the gentlemen of the "Mass. State Board of Agriculture,"

and those of the "Mass. Society for the Promotion of Agriculture" were very much in earnest in all that relates to the agriculture of their State, we made an appeal to these bodies, through the *American Agriculturist*, in all earnestness, to look into the matter, as we knew, better than they, what mischief was being wrought by this offer of the "Butter Compound" from South Framingham, "right under their noses," so to speak. Before these bodies were heard from, an Agricultural Editor from Boston made us a call, and we asked him why this "Butter Compound" business was allowed in Massachusetts and—in all places in the world—in the vicinity of Boston. This gentleman informed us that all their knowledge of the matter was obtained from the *American Agriculturist*, and that these South Framingham circulars did not "circulate" around home. He had never seen one, though living within a few miles of the place whence they are issued, while we had them by scores. We certainly can not blame the associations above referred to for not before acting in the matter, when a gentleman prominent on the agricultural press of Boston had never seen one of these "Butter Compound" circulars, until we gave him one! Recently we have heard that the Trustees of the "Mass. Society for the Promotion of Agriculture" have taken action in the matter. They have procured samples of the "Butter Compound," and have had analyses made by some of the chemists of Boston and vicinity. The analyses show the "Compound" to consist mainly of "Common Salt," "Burnt Alum," and "Sulphate of Soda," and perhaps small quantities of other salts, of little consequence. The important constituent is the alum, well known for its ability to curdle milk, but through the ignorance of the "Compound"-makers, the alum, in the samples tested, was *over-burnt* and thus made nearly insoluble. Some of the gentlemen interested in the matter, made a trial of the Butter Compound, "according to the directions." We do not know what their directions were, but infer that they were essentially those sent out by the Ohio "Buckeye Company," which are as follows:

DIRECTIONS FOR USING COMPOUND.

Take a pint of fresh unskimmed milk, and as much of the Compound as you can heap on a nickel cent, and thoroughly mix the milk and Compound together, in the churn; add to this one pound of soft butter, and churn until the whole mass has come to butter. If everything is of right temperature the butter should come in from one to two minutes, sometimes it takes a little longer. If you desire to give the butter a color take a small quantity of annatto and dissolve in hot melted butter; a teaspoonful of this will be sufficient to color two pounds of butter. The juice of carrot may be used, and is an excellent coloring matter. The yolk of an egg is good, but butter colored with it will not keep sweet so long.—Be sure to add salt before churning. Make the butter into roll without working. These proportions will make two pounds of butter, the extra pound costing about five cents. By increasing the proportions any quantity can be made at a time. The cream butter used should always be made pliable so the dasher will go through it easily; the milk should be lukewarm, same as if just from the cow. Churn should always be scalded and warm enough to prevent chilling the milk. To make a small quantity a small churn should be used. After churning put the butter away and let it get hard, and it will keep as long, and be as good, as pure cream butter. If you do not understand making butter, get some one who knows how, to test it for you, and you will find the Compound to work like a charm. The butter being just as good without being colored, it is not essential to use coloring matter except to make it look better.

The gentlemen who made the trial—and who are well known as practical dairymen—followed the instructions carefully. They took the requisite quantity, 1 pound of butter, the pint of milk, the required quantity, "enough to lie on a nickel cent," of the Compound, and churned according to directions. When they had gone through with it all and worked the butter in the usual way, they had as a result just *one pound of Butter!*

As already stated, the analyses showed that the alum had been so overburned, as to be insoluble. Had the alum been properly "burned"—the water of crystallization merely driven off—the alum would have been soluble and would have coagulated the milk and made what almost every housekeeper knows as an "alum curd."

Now what does all this "Butter Compound" amount to? Simply this, when made as it is intended to be, it is burnt alum and salt. What does it produce, when used according to directions?—Butter—genuine butter—"cream butter," the directions say—as if there could be any other! Is swished about in a churn with milk, to which this burnt alum stuff is added. The alum will, of course, curdle whatever is coagulable in the milk, and this curd, or incipient cheese, is mixed up with the real butter, to increase its weight. At the end you have butter with some very poor cheese mixed through it, or some very poor cheese made very greasy with real butter.—"You pay your money, and takes your choice." The whole thing is one of the very worst forms of fraud, and the gentlemen of the "Board of Trustees of the Mass. Society for the Promotion of Agriculture" are entitled to the thanks of the agricultural community of the whole country for what they have done in exposing this very mean fraud upon farmers. Now let them prosecute the South Framingham concern for obtaining money under false pretenses—for, sure, their fraud don't work—the alum, Jones, is *burnt too much*—and shunt that thing up.

P. S.—Since the above was in type, we learn from good authority, that a complaint has been made to the Post-

Office Department as to Jones & Co., whose business is by no means confined to the "Butter Compound."

Hay-making Machinery.

There is no more profitable expenditure of capital in agriculture than that for labor-saving machinery, and there is no more useful machine for the relief of human labor than the mower. As a matter of calculation it is easy to show that, where only 10 acres of grass is to be cut, it will pay to have a mowing-machine, hay-rake, and horse-fork. With regard to mowers, we have from time to time given the results of our experience with different machines. While old favorites are still excellent and have their good points, new improvements are constantly coming out. We now record the experience



Fig. 1.—FORK OPEN.

of a careful test of the Champion mower, formerly mentioned as the Haymaker or the Champion Hay-maker. This machine, being unlike any other, and possessing a novel motive apparatus, deserved a thorough trial. A machine was put through every possible test last season, both personally by the writer, and by several neighboring farmers, during a lengthened season of hay-making, with the result that it was found excellent in all circumstances. The draft is light, the ease with which it works, and the noiselessness of its motion are perfect; the knife will run at any angle, and the bar may be lifted perpendicularly, while the machine is operating, so as to pass a tree closely without putting it out of gear. It will start in the grass with ease; it will cut low or high, or take up lodged grass; the knife may be raised at either end or altogether, from an inch to a foot, so as to pass over stones or obstructions, while still cutting. There are no gears; no pitman; the only two cogwheels used are enclosed and safe from dirt; there is therefore no rattle, and the risk of breakage is reduced to a

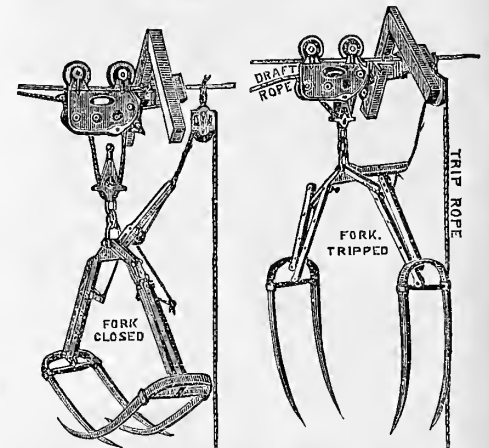


Fig. 2.—THE GARDNER HAY-FORK.—Fig. 3.

minimum. The absence of machinery is so striking, that one fancies the mower consists of a pair of wheels, an axle, and a cutting-bar, and a seat for the driver, there being nothing else conspicuous about it; yet the strength and solidity of all the parts are apparent. On the whole it is the most valuable improvements in modern harvesting-machinery.

Another improvement that has come to our notice is the Gardner hay-fork, shown in the illustrations. The advantages of this fork are readily perceived. It can take the largest hold of any fork we know. (See fig. 1.) It can be used with hay, straw, grain, corn-fodder, manure, or short straw, such as buckwheat or clover-seed straw. When closed, as seen at figure 2, the load is safely gripped, and the arrangement of the draft-rope and carrier is such that it cannot be tripped without design. Fig. 3 shows the position of the fork when tripped. The fork, when it ascends, is caught and held in the car, and relieves the draft-rope from all strain or weight. This apparatus is the invention of an ingenious farmer of Orange County, New York.

Experiments with Potatoes, Beans, and Rutabagas, on Farm of Maine State College, at Orono, by Mr. G. W. Lufkin.

Soil: Sandy loam, quite stony, well drained. *Previous Treatment:* In pasture previous to 1875, then summer-tilled; in 1876, had stable-manure, four cords per acre; crop, mixture of wheat, oats, and barley; yield, 20 bushels per acre. *Size of Plots:* The whole experimental area was $2\frac{1}{2}$ rods long, and a little under 4 rods wide. This was divided lengthwise into strips 3 feet wide, each of which served for one row of plants. Alternate strips were manured, and served for the experiments, the intervening ones being left unmanured. The area was cross-divided into 3 equal divisions, each $\frac{1}{3}$ rods long. Division I. had Potatoes, II. Beans, and III. Rutabagas. Each experimental plot was therefore $7\frac{1}{2}$ rds. \times 3 ft., one one-hundred-and-twentieth of an acre. *Amounts of Fertilizers:* 800 lbs. per acre. *Application of Fertilizers:* A single shallow drill was made lengthwise through each strip, the fertilizers strewn therein and mixed with the soil. *Seed put in:* June 9. Potatoes, cut with two eyes on a piece and dropped one in a place at intervals of a foot; Beans, the "Yellow-eyed," 4 in a hill, hills 1 foot apart; Turnips sown with hand seed-drill. *Weather:* June and July dry, August wet. *Harvested:* Potatoes, Sept. 8; Beans, Sept. 14, poor crop; Rutabagas, Oct. 5, very good crop. *Costs and Valuations:* The cost of fertilizers includes price in New York or Boston, plus \$5.00 per ton for freight and \$2.00 per ton for applying. The potatoes are estimated at 75 cts. per bushel of 60 lbs.; beans at \$2.75 per bushel of 67 lbs.; rutabagas at 25 cts. per [measured] bushel.

No. of Plot.	1	2	3	4	5	6	7	8	9	10	11
KIND OF FERTILIZER.	FERTILIZERS FROM EXPERIMENT STATION.						COMMERCIAL FERTILIZERS.				No Manure.
	Dried Blood I.	Superphos- phate II.	Potash Salt III.	Mixture I+II.	Mixture I+II+III.	Plaster ¹	Kainit ²	SUPERPHOSPHATES, "AMMONIATED." ³			
Important Ingredients.*	Nitrogen N.	Phos. Acid P ₂ O ₅	Potash K ₂ O	P ₂ O ₅ +N	P ₂ O ₅ + N+K ₂ O.		Potash, etc.	P ₂ O ₅ +N.	P ₂ O ₅ +N.	P ₂ O ₅ +N.	
I.—POTATOES.											
Yield, { Per plot.	61 lbs. 8 oz.	86 lbs.	52 lbs.	79 lbs. 12 oz.	77 lbs.	56 lbs. 2 oz.	36 lbs. 12 oz.	82 lbs. 8 oz.	79 lbs.	63 lbs.	28 lbs. 8 oz.
Increase, {	33 lbs.	57 lbs. 8 oz.	23 lbs. 8 oz.	51 lbs. 4 oz.	48 lbs. 8 oz.	27 lbs. 10 oz.	8 lbs. 4 oz.	54 lbs.	50 lbs. 8 oz.	34 lbs. 8 oz.	.....
Value of Increase, {	\$49.50.	\$86.40.	\$35.10.	\$76.80.	\$72.80.	\$40.78.	\$12.80.	\$81.00.	\$75.90.	\$51.90.	.....
Cost of Fertilizer, { Per acre.	20.00.	21.00.	26.00.	21.50.	22.33.	6.00.	18.00.	22.00.	22.00.	22.00.	.....
Gain (or Loss), {	\$29.50.	\$65.40.	\$9.10.	\$55.30.	\$50.47.	\$34.78.	\$5.00.	\$59.00.	\$53.90.	\$29.90.	.....
II.—BEANS.											
Yield, { Per plot.	1 lb. 10 oz.	9 lbs. 10 oz.	2 lbs. 2 oz.	8 lbs. 2 oz.	6 lbs. 8 oz.	6 lbs. 2 oz.	4 lbs. 10 oz.	8 lbs. 6 oz.	8 lbs. 6 oz.	8 lbs. 12 oz.	4 lbs. 10 oz.
Increase, {	3 lbs.	5 lbs.	2 lbs. 8 oz.	3 lbs. 8 oz.	1 lb. 14 oz.	1 lb. 8 oz.	.....	3 lbs. 12 oz.	3 lbs. 12 oz.	4 lbs. 2 oz.	.....
Value of Increase, {	Loss.	\$25.87.	Loss.	\$18.11.	\$9.70.	\$7.76.	.....	\$19.40.	\$19.40.	\$21.34.	.....
Cost of Fertilizer, { Per acre.	\$20.00.	21.00.	\$26.00.	21.50.	22.33.	6.76.	\$18.00.	22.00.	22.00.	22.00.	.....
Gain (or Loss), {	Loss.	\$4.87.	Loss.	\$3.39.	\$12.63.	\$1.00.	Loss.	\$2.60.	\$2.60.	\$0.66.	.....
III.—RUTABAGAS.											
Yield, { Per plot.	(5)	3 bu. $\frac{1}{2}$ pk.	(5)	4 bu. 1 pk.	4 bu. 1 pk.	2 bu. $\frac{1}{2}$ pk.	2 bu. 3 pk.	3 bu. 3 pk.	3 bu. 2 pk.	2 bu. 2 pk.	3 pk.
Increase, {	.....	2 bu. $\frac{1}{2}$ pk.	.....	3 bu. 2 pk.	3 bu. 2 pk.	1 bu. $\frac{1}{2}$ pk.	2 bu.	3 bu.	2 bu. 3 pk.	1 bu. 3 pk.	.....
Value of Increase, {	.....	\$71.25.	.....	\$105.00.	\$105.00.	\$48.75.	\$60.00.	\$90.00.	\$82.50.	\$52.50.	.....
Cost of Fertilizer, { Per acre.	.....	21.00.	.....	21.50.	22.33.	6.00.	18.00.	22.00.	22.00.	22.00.	.....
Gain (or Loss), {	.....	\$50.25.	.....	\$83.50.	\$82.67.	\$42.75.	\$42.00.	\$68.00.	\$60.50.	\$30.50.	.....

* That is the most valuable fertilizing ingredients. + Increase (or loss) as compared with unmanured plots. 1. Plaster consists mainly of sulphuric acid and lime. 2. Kainit contains about 12½ per cent "actual potash;" the bulk is made up of common salt and magnesium compounds. 3. These contained probably 9 to 12 per cent of available phosphoric acid and 2 to 3 per cent of nitrogen. 4. Raftery and Williams'. 5. Plants grew well until the middle of July, when they died.

Science Applied to Farming.—XLI.

More about Farm Experiments with Fertilizers.

How the "Maine State College of Agriculture and Mechanic Arts," is teaching its students in agriculture in the field as well as the class-room, and helping them to teach it to the farmers of their State also, is shown by a series of experiments, made last season by a student, Mr. Lufkin, under the direction of Prof. J. R. Farrington, of whose good doings I have had occasion to speak before.

The report fairly bristles with points of practical importance. Let me ask the reader to study the descriptions and figures carefully, referring to the article in the April *American Agriculturist*, for explanations about fertilizers and technical terms, and to note: (1), In these experiments, potash salts, alone, did little apparent good, and fell far short of paying their cost. Among the crops most apt to be helped by potash, are grass, potatoes, roots, and the leguminous crops, which include beans. None of these got any considerable good from the potash here. Mr. Farrington has had similar experience with kainit, before, and found leached ashes as good as unleached. (2), Phosphoric acid helped the crops in every case. The best yield of each crop, potatoes, turnips, and beans, was with phosphoric acid, alone or with nitrogen. (3), The only case where dried blood alone seemed of any use, was with potatoes; but with superphosphates it evidently increased the crop in several cases. (4), Taking all in all, as tested by the crops and fertilizers named, the chief need of this soil seems to be phosphoric acid, and next nitrogen. In its present condition it does not call for potash.

Artificial Fertilizers bring Profit on some Soils and Crops, but Loss on others.

(5), As indicated by the experiments, this is one of the soils on which artificial fertilizers of the right kinds, and with the right crops, can be used with great profit. It is what the Germans term a "thankful" soil. Weak of itself, with a very little help it brings good crops. On the supposition that the single plots without manure were fair samples of the whole, according to Mr. Lufkin's figures, the nitrogenous superphosphates gave, with potatoes and turnips, a gain of from \$50 to \$80 per acre. With beans, on the contrary, there was almost uniformly a loss. Mr. Lawes, of England,

says, as the result of 30 years' experimenting and practice with fertilizers, "it is not advisable to sow artificial manure with beans, peas, tares, or other leguminous plants. Corn, [i. e., grain and root crops,] will take all the artificial manure which the farmer can afford to pay for." (6), The indirect action of the fertilizers evidently counts for a good deal here. The yield seemed to be increased by almost anything, and in a way that can hardly be accounted for by the direct supply of plant-food.

This is certainly a very creditable experimenter. Still it has some defects. These, however, I do not regret. As a wise old Roman writer on agriculture, Columella, says, "There is no occupation in which we cannot learn from our errors." (7), One defect is the lack of unmanured plots for comparison. If there had been three, one in the middle and one on each side, as recommended, we could have told much better whether the soil was uniform, and what it could do of itself. Still the inferences above, seem to me, on the whole, warranted. (8), In such experiments, generally, the gain or loss on a single plot is not an accurate measure of what it would be on a large scale.

(9), The plots were very small, four square rods, instead of ten, as suggested, but had the advantage of being long and narrow. At the same time so many concurrent results do show, I think, that, in its present condition, this soil needs phosphates more than anything else to enable it to bring good crops. (10), If Mr. Lufkin had not taken much pains to mix the fertilizers thoroughly with the soil, the heavy dressings on such small plots, 800 lbs. to the acre, would have been apt to injure the crops badly. As it is, I suspect that the trouble with the rutabagas on plots 1 and 3, was that the dried blood and the potash salts were too strong for the plants.

Practical Applications—What Fertilizers to Use.

In Mr. Birdsey's experiment described in the February article, potash salts brought the best results. His general experience tells him that guano, phosphates, and bone, which furnish nitrogen and phosphoric acid, do not pay. I think he is clearly justified in putting potash on that soil, and will be, so long as it brings him good crops. Mr. Bartholemew, on the other hand, found phosphoric acid uniformly beneficial, and got very little benefit from anything else. He ought to confine himself more closely to phosphates. Mr. Farrington had the

best results with phosphoric acid aided by some nitrogen. So long as his field is in its present condition, I think he need not apply potash. His soil may be like that of Mr. Lawes' farm in England, which has proved capable of keeping up a full supply of potash through more than thirty years' cropping, and has, during that time, given as good crops with nitrogen and phosphoric acid, in chemical fertilizers, as with annual and heavy dressings of stable-manure. Meanwhile I think both Mr. Farrington and Mr. Bartholemew ought to make comparative trials—with superphosphates, bone, fish, and guano of various grades—in order to learn which will be the most economical sources of the needed ingredients, and how profitable each will be. In cases like Mr. Sage's, where the complete fertilizer, only, was successful, if the results are confirmed by future experience, the complete fertilizer will be in place. All ought, however, to make the most of what their farms produce, and piece out with whatever else they find to be the best and cheapest.

What may happen in the Future, and with other crops.

If Mr. Farrington keeps on applying phosphoric acid with a little nitrogen, or Mr. Bartholemew phosphoric acid, or Mr. Birdsey potash alone, while the crops are taking these away, and other ingredients with them, the time will be pretty sure to come when these will be accumulated in excess, and the others relatively deficient in the soil. Nor would it be wise for Mr. Birdsey to depend on potash salts, or Mr. Bartholemew on phosphates alone, for all kinds of crops. If either one is to grow wheat next season, some nitrogenous manure, say nitrate of soda for Mr. Birdsey, or Peruvian guano for Mr. Farrington, would very likely be profitable. If Mr. Bartholemew or Mr. Farrington were going to seed down to grass, I should advise bone, which, with a good deal of phosphoric acid, would supply also a little nitrogen, rather than a "plain superphosphate" without nitrogen. And if they want to put in clover and keep it in, a dressing of ashes with the bone would help it a good deal, and for that matter would improve the grass also. So Mr. Birdsey would be apt to find that a little superphosphate would improve a turnip crop even where his corn had seemed to ignore it. And in either case phosphates, Peruvian guano, dry ground fish, and the like, might be very useful to force early vegetables for the market.

W. O. ATWATER,
Wesleyan University, Middletown, Conn.

Contiguous Houses, Costing \$1,000 each.

BY E. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were originally prepared for six connected cottages, just completed, for Mr. Fred. Storms, (manufacturer), at Bayside, L. I. They

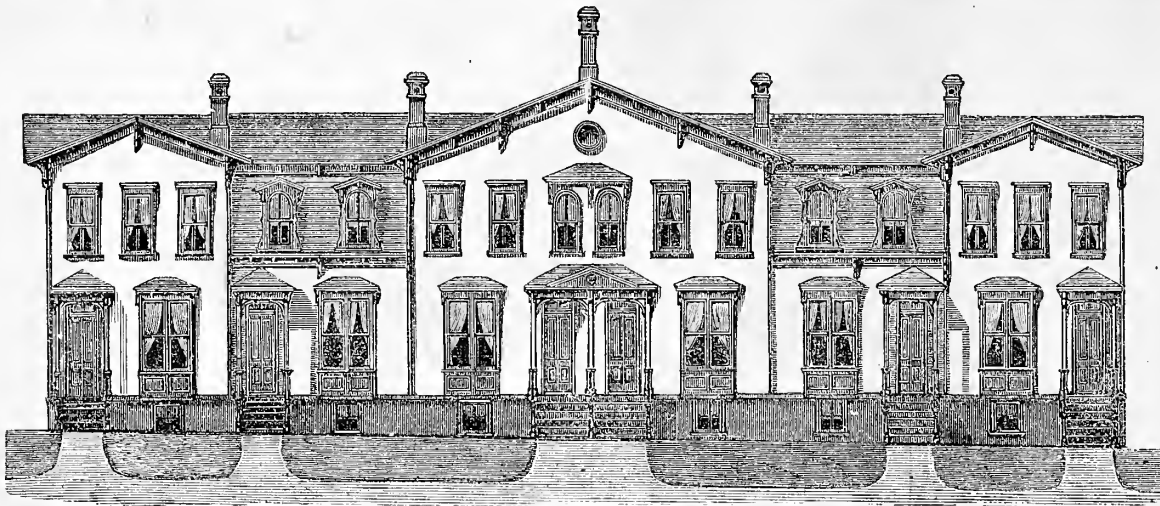


Fig. 1.—FRONT ELEVATION OF ROW OF SIX HOUSES.

were designed to give the largest amount of accommodation, convenience, and finish, possible, for one thousand dollars each, and are especially adapted to rapidly filling localities, or manufacturing districts. By this system of building in blocks, a very large saving is made in materials and labor, at first, and little expense is required to keep them in order afterwards. Where desired, the introduction of gas, or water-pipes, may be made, from one to the other direct, at small cost. Such connected houses are really more comfortable than separate ones, as they protect each other at their sides from the extreme changes of the outward temperature; and are therefore warmer in winter, and cooler in summer. The site chosen in this case is elevated, and has a westward frontage, securing the important advantages of good drainage, and the admission of direct sun-light to every room.

....**Exterior**, (fig. 1).—Building in blocks is a favorite mode with many large owners of village property. The chief objection to a majority of such erections is their formal and stiff appearance, arising from a monotonous uniformity, a repetition of parts, and the overpowering predominance of horizontal lines—partaking too much of the city-street style. To overcome such objections in this design, simple but effective irregularities were introduced, so that really no two dwellings are alike. The sky-lines are broken and varied; the main roofs have pedimented projections—with Mansard sections intervening; all horizontal lines are either shortened or omitted, leaving vertical ones to prevail, and the window openings are varied in their form and distribution. While these several features are essential to the good appearance of such buildings, giving them the pleasing elements of variety and picturesqueness, they do not add very materially to the cost. Cottages designed for simple dwellings, whether built apart or connected, should, as far as possible, preserve their identity as cottages, and if destined for undulating and picturesque situations, should be outlined to accord with their surroundings.**Interior**.—The following description of rooms has reference to the house at the extreme left; its relation with the adjoining one is shown by the dotted sketch at the side. All have equal accommodations; this and two others are similarly arranged, the remaining three have their sides reversed.**Cellar**, (fig. 2).—Height of ceilings 6½ feet. It is thoroughly floored, has outside entrances front and rear, and being well out of ground, is light and airy, and is adapted to general

use for the coarser work. Bins for coal are placed where they may be readily filled from the front window. One corner is partitioned off for a bath-room and water-closet. The window to the latter is shielded by a latticed inclosure beneath the rear lobby, adding to its privacy. The rear area not being protected by the rear stoop, has hatchway

doors to be used in stormy weather. The Stairs lead from near the front door, to the main hall of the first story.**First Story**, (fig. 3).—Height of ceilings 10 feet. A Hall, Parlor, and Living-room are embraced in the divisions. The hall is entered from a neat porch, contains the main stairs, and leads to the parlor, living-room, and the cellar stairs. The parlor is pleasantly arranged with double windows in front, has neat stucco cornices and centers, and a marble mantle. The chimney-breast is placed to allow sufficient space between it and the central partition, for a piano, or other large piece of furniture. The living-room is of good dimensions and shape, has two windows, a closet, a large fire-place, and a sink. The door leading to the rear lobby has glass upper panels, admitting additional light in the room in pleasant weather,

balance of the loose earth being used to fill more depressed grounds). All interior cross-walls of brick are omitted, their places being supplied with brick "footings" and framework. These brick footings are laid in trenches 4 inches below the cellar bottom, and are 8 inches high and wide. Sills of 4x6 timber are laid on the center of these footings (edgewise), leaving a margin of 2 inches on each side for the support of the ends of the cellar-floor beams. Girts are put above the sills (also of 4x6 timber), anchored to, and level with the outer foundation walls, and are supported by studding and braces, thus forming an inexpensive and substantial division and bearing between the cellars. The principal frame is of regular sized sawed timber, thoroughly framed and braced. The sidings are of clear pine clapboards, laid on hard-rolled sheathing-felt. The upper roofs are covered with IC charcoal tin, "tern-plate," and the Mansard sections are slated on hemlock hoards. The interior flooring is of 7-inch milled spruce; outside flooring of 4½-inch milled pine. To prevent the transmission of sound, all the main divisions of framework between the houses are deafened by a filling of pale brick and mortar. The cellar ceilings and side walls are white finished on one coat of brown mortar. All other plastering is hard-finished on two coats of brown mortar. Circular ventilators are placed in each gable, and two ventilators made to resemble the chimney tops are placed on the higher or central ridge of the roof, to allow for the escape of heated air from beneath the roofing. All windows have 1½-inch sash, of four lights each; those in the cellar are hung with butts; all above are balanced with iron weights, and have outside blinds. The doors are first quality, four-panelled. The interior casings are of clear pine, and are neatly moulded, and the parlor windows have panelled hacks. The Painting is done as described

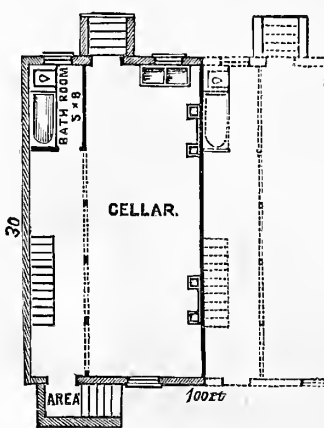


Fig. 2.—PLAN OF CELLAR.

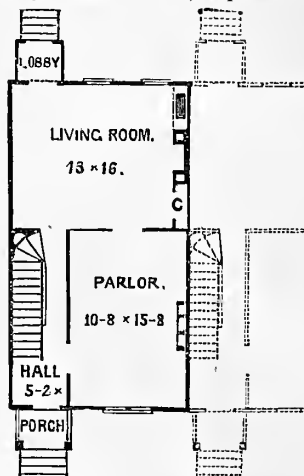


Fig. 3.—PLAN OF FIRST FLOOR.

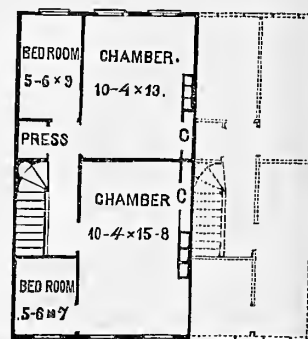


Fig. 4.—PLAN OF SECOND FLOOR.

when the lobby door will be likely to stand open, and through it the lobby will be lighted at night from within. The main stairs, leading to the second story, are of the "quarter-circle" pattern, and are neatly finished with hard-wood railing, with a niche above.**Second Story**, (fig. 4).—Height of ceiling 9 feet. This story is divided into a small Hall, two Chambers; two Bedrooms, and three Closets. Each of the rooms is well lighted, and chimney-breasts, with marble shelves, and stucco trusses are finished in each chamber.**Construction**.—The average depth of the excavations below the surface is three feet. The Foundation walls are of brick work, 8 inches thick, those for the exterior are 7 ft. 4 in. high, showing an average of 4 ft. above the final grades. (In this particular case, the site being elevated, only 4 inches of additional filling was required in the grades, the

in the *American Agriculturist* for June, 1877, except that the blinds are of a chocolate color.

Estimated cost of materials and labor:

Mason's materials and labor	\$1,350.00
Lumber of all kinds	1,150.00
Tinning and Slatting, (complete)	300.00
Rolling Lining, \$30; Porches and Lobbies, \$275	305.00
Cornice materials, (prepared at mill)	120.00
Sash, Doors, and Blinds	400.00
Stairs, with outside Steps, with Railings	500.00
Shelving and Sandries	325.00
Nails, \$55; Hardware, \$300	355.00
Painting, \$300; Cartage, \$85	385.00
Carpenter's labor, (not included above)	800.00

Total cost of Six Dwellings.....\$6,000.00

Mr. Storms added about \$1,000 to the total cost of six buildings in plumbing, sewers, gas-pipes, and in fencing separate front and rear yards, to each house. As these improvements are not generally required, they are omitted in the estimate.

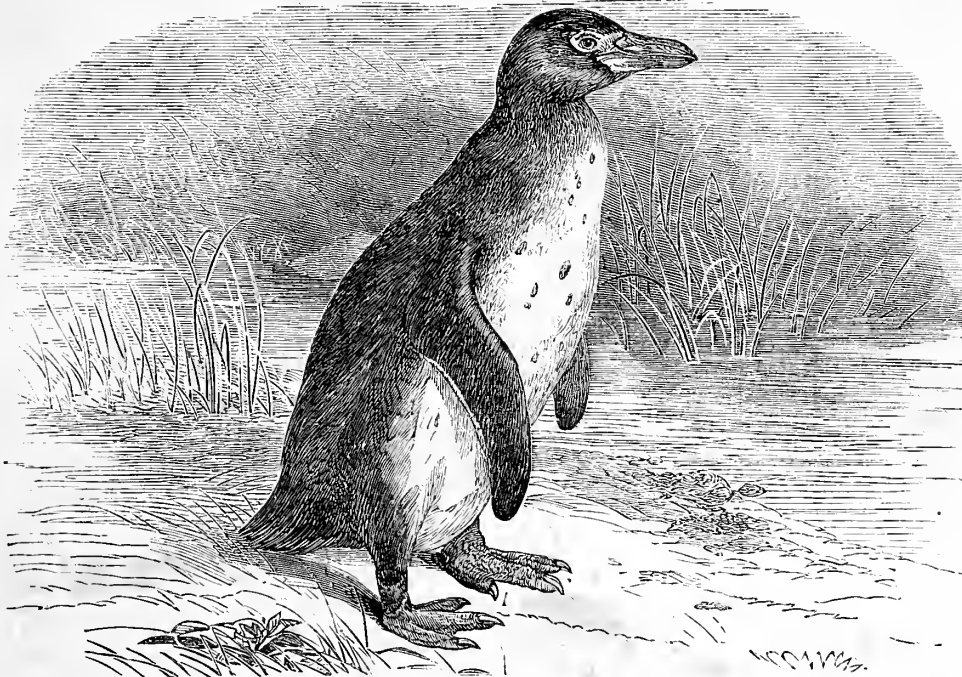
White-Crested White Polish Fowls.

The Polish fowls are known by their very conspicuous crest. The origin of these crested fowls is somewhat obscure. Cuvier and Buffon mention them, but are unable to fix upon their original source. It is supposed that they were first described by an Italian author, about 260 years ago, in whose treatise rough wood-cuts of some crested fowls were given as "Paduan Fowls." Padua was an Italian city, and these crested fowls were, therefore, Italian. Buffon refers to the Paduan fowls, and supposed them to have been descended from Asiatic stock; he also described a variety with white body and black crest, which has long been extinct, although breeders have made many efforts to restore it. The varieties of the Polish fowls now known, are the White-crested White, the White-crested Black, the Golden, and the Silver-spangled, with some bearded varieties. Of these, the

most beautiful is, perhaps, the first mentioned, the portraits of a pair of which are given on this page. This pair was bred by H. T. Sperry, Esq., of Hartford, Conn., who has devoted ten years of his leisure from journalistic duties to their careful culture. He has made a specialty of this breed, and has imported fowls, at a cost of \$130 in gold the trio, for the improvement of his stock. The Polish fowls are profuse layers, non-sitters, delicate table fowls, of handsome appearance; they possess an oddity in their crests, which makes them attractive to the fancier and the amateur. They are contented in confinement, and bear close quarters very well; are easily kept within bounds, and becoming readily attached to their owners, make pleasing pets. When young, they are unusually elegant with their full crests, gracefully shaped little bodies, and tame disposition. On the whole, there is hardly any other breed which would give more satisfactory results in every way, where but one is kept, than this. It is somewhat strange, therefore, to find that Mr. Sperry is the only amateur who has devoted time, attention, and money, to the breeding and improvement of this variety of fowl as a single specialty. As a matter of course, it is easier to excel in one thing than

in many, and Mr. Sperry's success at the exhibitions over other breeders, is the natural result of his singleness of purpose and perseverance. For some years back, he has taken the principal prizes at the poultry exhibitions wherever his birds have been shown. For ornament, the pure white breeds have a decided advantage over the colored ones, because they show so conspicuously upon a green lawn or a field. The White Leghorn is very popular on this

account, as well as for its prolific egg-producing; but the White Polish has an advantage over the graceful Leghorn in the possession of a crest, a heavier body, and better flesh, as well as being equally valuable as an egg-producer. For ornament, therefore, as well as for use, the White Polish should be



A SOUTH AMERICAN PENGUIN.

popular fowls. Perhaps they have formerly suffered in reputation somewhat from vicious breeding in the hands of persons less conscientious than Mr. Sperry. The breeders we refer to are fortunately not Americans, for it is to our breeders that these fowls owe their restoration to their old vigor and constitution. As in other particulars, so in this less important one, our poultry fanciers have been able to beat foreign breeders at unfavorable odds.

The Penguins.

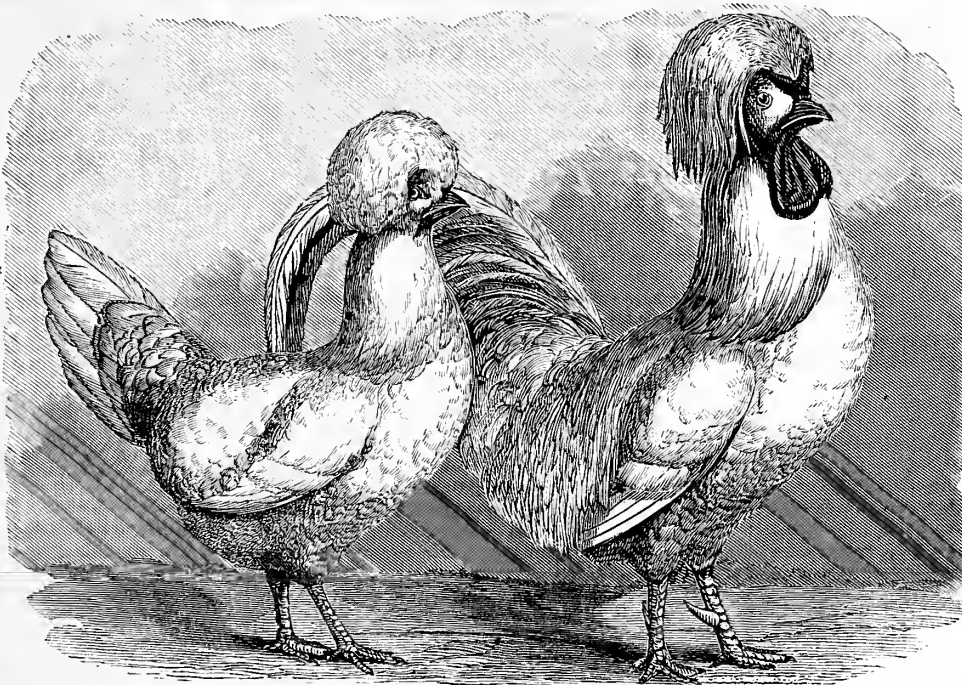
Under the common name Penguin, are included birds of the Southern Hemisphere, which are placed

the South Pacific in such numbers that the accounts of explorers in those regions as to the extent of the flocks, and the manner in which they cover the shore, seem almost incredible. It was formerly supposed that the immense guano deposits of the western coast of South America, and neighboring

islands, resulted from the accumulated dung of these birds, though some recent naturalists do not accept this view of the origin of the guano deposits. The acquisition of a fine specimen by the Royal Zoological Gardens (London), allowed "The Field" to present the portrait which we have re-engraved. The plumage of this bird, when old, is of a dark-brown color, the breast being white, spotted with brown. But soon after moulting it undergoes a change. In the moult, the feathers do not fall off singly as is usual with other birds, but in flakes and large scales. The new plumage, when complete, is dark-bluish-black on the back and wings; a white line passes over the eye towards the crown of the head; the breast and

belly, and under parts of the wing, are white; a broad black line borders the white all around from the throat to the tail. The Penguins are all most expert fishers and divers, and dart through the water with the greatest activity. Upon land they jump and wabble about in a most ungainly fashion, their movements being somewhat as if their feet were tied together, and present a ludicrous mixture of hopping, shuffling, and falling about. Of the habits of the Penguins, we have a graphic description by one of the company of the exploring ship "The Challenger," in his "Log Letters." The writer describes what is known as one of their "rookeries," or nesting places, as follows:

"Between the foot of the cliff and the beach was a bank covered with long tussock grass, among which the Penguins had their nests, and from which they had regular roads into the rookeries. Among the stems of the tall tussock grass they were sitting about in thousands on their nests, consisting of a layer of grass. It was not pleasant walking in the rookery; horrible smells, to say nothing of the fierce digs we got in our legs, and the fiendish noise—something between the last notes of a donkey's bray and a deep-voiced sheep—a perfect roar which is kept up night and day, and plainly audible from the ship, sounding on a still night like the roar of a heavy surf. They never had more than two eggs, sometimes only one, larger than a Dorking's, colored



WHITE-CRESTED WHITE POLISH FOWLS.

by naturalists in three or four different genera. They are all found upon the sea shore, and are similar in their habits to the related Auks of the Northern Hemisphere. The general appearance of the Penguins is shown by the engraving upon this page. These birds are found upon the islands of

dirty-white with brown stains. The young, just out of the egg were black, naked things. Many of the eggs were cracked by the young inside, who were poking their bills out. Afterwards we walked back to the rocks where we had landed, a distance of five or more hundred yards, through the densest

part of the rookery, and ever to be remembered by me as the most awful walk I ever had. The grass grew six feet high, matted and tangled, while thousands and thousands of Penguins swarmed between the tufted stems. Whenever we stopped to see where we put our feet, we were instantly attacked by a host of infuriated birds, and got horribly tweaked and digged at. You can have no conception how infuriated and hold they are when protecting their nests, rushing at our legs in crowds, and following us, pecking viciously. They were so thick that it was useless trying to avoid them, so one had just to tramp on as fast as possible, amid the deafening brayings, and overpowering stench. Suddenly we were stopped by finding ourselves on the brink of a low cliff. This stretch of rock was covered with Penguins, one stream coming from the grass and putting to sea, and the other stream landing and hopping into the rookery. Marvellous jumps they made in coming down the rocks, doing a jump of three feet and more quite easily, bolt upright the whole time. They jump into the sea from off a ledge of rock feet foremost, and land very cleverly; as the wave came washing up against the rock, they came with it under water, shooting out of the depths in shoals, clinging on to the rocks by their feet, and when the wave receded the face of the rock was plastered with them, and before the next wave came they had elampered up in some wonderful fashion, helping themselves with their bills, but not with their flappers."

Among the Farmers.—No. 28.

BY ONE OF THEM.

Tramp, Tramp, Tramp.

There is no echo attending the muffled footfall of the army, the straggling forerunners of which already appear along the highways and in our door-yards. Where the tramp hibernates is, perhaps, still an undiscovered fact in Natural History. There is chance enough in the city, and many a snug corner in boiler-rooms, under sidewalks, and in coal-holes. I am curious to know, not where or what have been the winter quarters of this army, but whether the people are any nearer the solution of the tramp problem than they were a twelvemonth ago. I have the profoundest pity, not to say sympathy, for the poor fellow who is out of work, and can get neither work to do nor food to eat; but not a particle for the 20,000 able-bodied wanderers of the male sex, who make our quiet roads both hideous and dangerous. A visitation or two of locusts, rouses half the country, and even the General Government, to put them down; but this visitation of "hummers" is ten times as disastrous, and a great deal nearer home. So far as I am aware, little effort has been made to have more stringent laws passed in regard to this nuisance, and our people are waiting in apathy to see if the times, or the silver bill, or resumption, or some other occurrence, will not prevent the same condition of things happening as last year. It is very pleasant "to entertain strangers," but tramps are a kind of strangers who are so often entertained unawares, and who so often manifest a most unpleasant familiarity with your house and surroundings, that they are, as a class, in no way entitled to be regarded as strangers, any more than minks and foxes are. Arrest as vagrants, detention at steady labor, with enforced cleanliness and tidiness, and with good plain food, for as long a time as the law allows, will do away with the tramp nuisance and danger in a very short time.

How Often to Feed Work Horses.

There is a conflict of authorities on this subject, but writers agree that all horses ought to be fed as often as once in about six hours, during the day—some say four hours. No doubt, a horse may eat his fill and digest it in about six hours, and be ready for another ration. They may be managed so as to be ravenous for food all the time, and yet eat more than enough—and one set of horses will be in good condition, will do about twice the work of another set on half the feed. I have been watching the working of an experiment—if so it

may be called—which furnishes a case in point: A long established firm in New York employ constantly, and have heretofore owned, about five one-horse truck teams. That is, five horses have done their work, a considerable part of the time one having but little to do, but necessary in case of any emergency. Some months ago the entire stock of horses, trucks, stable furniture, harness, etc., was sold to an employé, who has, since then, added no new horse to the stable, done the same work, done the carting for another house—in fact, got nearly double the work out of the horses—and yet they have been constantly improving in looks and in ability to do work. At first the feed was not essentially changed. The horses had better care, and the eye of a master, who was their owner, though not their driver. The truckmen, somehow, felt more interest in their work and in their horses, and this made a difference; but all things combined must have produced their legitimate result within two or three months. At all events, matters were getting on very well, when the owner decided to

Cut Off the Noon Feed.

The horses had been getting about four to six quarts of oats during the hour of rest—between 12 and 1 o'clock—while the men were eating their dinner. I am not sure that they always got their full hour of rest, but they did generally. The result has been, a decided improvement in the condition of the horses, in their ability to work, and the gain of fully half an hour, when it is necessary to take it; for now, when work presses, the men are quite ready to forego their rest and, taking a hurried bite, be off with their trucks as soon as they can be loaded. The horses leave the stable at 7 o'clock, and return at about 6.30, the year round. Thus, they go twelve hours without feeding, and at more or less hard work, at a slow gait all the time, except when the trucks are being loaded and unloaded. When it is practicable, of course, loads are taken both ways, and this saving of time is also a saving of horse-flesh; for no doubt a heavy, well-fed horse is quite as much taxed in trotting home with an empty truck, as in drawing back a laden one. I should add that the horses are not deprived of the oats by not getting them at noon, for their morning and evening rations are increased, but not proportionately, there being a saving of about two quarts to each horse on an average. Nevertheless, they are now doing better, and looking fifty per cent better, as well as doing more work at less cost of feed than under the old method.

Horses' Habits in Lying Down.

One thing more about horses. I don't know why a horse should not be as much rested and benefited by lying down as any other four-footed beast. A horse often sleeps standing up, and so does an ox. I know that it was claimed for a gray horse once, as a special merit, that he would not lie down unless his stall was well littered; consequently all expense of bedding might be saved, as no doubt it had been. Horses are peculiar about lying down. It seems as if they knew their helplessness when in this position, and were bound never to expose themselves to danger. Although many may be lying down, every horse in a stable is on his feet at the slightest noise. It is, besides, almost universally regarded, and usually truly, as a sign of ill health, if a horse is found lying in the day time. I have recently come to the conclusion, however, that if horses are perfectly easy in their minds, they will take as much comfort in lying down as cattle do, and I can point to one stable, not my own, where spirited well-fed horses may be seen lying down at almost any time of the day or night, and it comes from the perfect confidence they have in their groom.

Chances for Farming.

With an overstocked labor market, and wages very low; with thousands of acres of farming land, which have been lying fallow, or rather running wild, for fifteen years, more or less, in every direction within fifty miles of New York, returning to the hands of the original owners, or to mortgagees, and with the best fertilizer in the world, the dung of well-fed horses fairly "going a-begging" for some one to buy and use it, I see no reason why we can

not again become a farming community. We have been in the habit of raising crops which would not bear long transportation—hence were adapted to the home market, which we could watch and take advantage of. Gradually steam communication with southern ports has made it almost as easy to send peas, potatoes, and parsnips, from Virginia or the Carolinas, as from Monmouth Co., N. J. Nevertheless, we have a great advantage in our ability to get city stable-manure. For this, Long Island is still the great market, yet transportation by boat to the Connecticut ports along the Sound, and up the Connecticut River as far at least as Hartford, for the use of the tobacco-growers, has been in vogue for some years. This year the tobacco men have no heart, and are turning their land to the raising of crops which can be consumed on the farm, or sold in the vicinity, and are buying no manure. The market gardeners of Long Island are so short of money, on account of the immense cabbage crop which went to waste last fall, that they are buying but little, and if railroads running through farming districts were as awake to their interests as is the Long Island Railroad, we should have a fertilizer at hand, which would make the waste land and old farms wave with wheat, and smile with potatoes. The Long Island road favors the farmers not so much in the matter of cheapness of transportation, which is not cheap, indeed, considering that the manure which they carry enables them to move sundry other articles of produce, and many passengers to and from the city, as in their willingness to accommodate those who live along their lines. They will throw off a car-load of manure at any point where it is most convenient to the buyer, if he will only set up a modest board with his name or "mark" upon it. Other roads ought to do the same thing, and besides should erect such cranes or derricks as can most conveniently move the manure from the boats to the ears.

The Supplying of Milk,

in the immediate vicinity of a large city, is certainly one of the most profitable branches of farming. Were farmers properly seconded by the city authorities, they would have no difficulty whatever in affording, at current prices, or say at six and eight cents a quart, as much pure milk as the citizens of New York will pay for. The close proprietorship of "milk routes" is one difficulty. The citizens have little idea that *they* themselves, and their children, are bought and sold like the very cattle whose milk they drink and get sick upon. A swill-milk stable, and its milk route, are sold together, and the route is just as much tangible property as the cows. Any farmer, or the agent of a company of farmers, who would undertake to sell, or even exhibit, pure milk along one of these established routes, would be mobbed; his cans would be emptied, or pierced, and the milk let out; or the milk would be drugged and so eurdled, or in some way spoiled. These things have occurred so often that the effort has been given up. The children pine for milk, which may be had in abundance if the City Government would only see fair play. What we need is

Free Trade in Milk.

As it is, it hardly pays to raise milk and sell it at three cents a quart, where land is worth more than \$100 an acre; and as that is all, or more, than we can often get for it of the milkmen, it follows that the milk business has been given up by our farmers to a great extent, and that now milk is brought from a great distance, or produced in the stables which abound in the immediate suburbs. A new impulse would be given to farming and stock-raising if farmers could dispose of their pure milk in the city. They would willingly submit to any sanitary restrictions, and their milk to any tests which would demonstrate either the presence of water, or any impurity; and the present seems a very favorable time to make an effort for free trade in milk. In connection with this abundance of manure, and the possibility of our being able to sell milk to compete with the watered and sickly stuff which drives people against their will to use condensed milk, instead of the natural product, I am led to think favorably of the effort now being made, with some success, to introduce the production of

Beet Sugar.

"Why people of sense call it beet root sugar, I can't see. What is a beet but a root?—that is all there is to it. We do not think of the tops when we speak the word, and to imitate the English is following a very poor example in matters of language; for I think they are as incorrect as they are opinionated.) It takes capital, and I verily believe it will prove a good investment for capital, especially in the vicinity of New York, where so much sugar machinery is lying idle, or earning so little. What modifications of the modern sugar houses it would require to enable them to work over the crude product of the beet sugar works, I do not know, but it seems as if the capital now invested, and nearly useless, might thus find profitable employment. On Long Island, along the Connecticut coast, in New Jersey, especially in Monmouth, Essex, and Bergen Counties, we have admirable land for beet raising, and we certainly have the manure. It will be easy to get the labor to do the work well, and yet not neglect the raising of all that market truck, which will be profitable one season with another. Whatever profit there might be from the beets, would be more or less regular—not subject to the same fluctuations and disappointments that attends the raising of cabbage and celery, and the like.

Farmers who consider this subject of beet sugar, must bear in mind that the sugar takes nothing from the soil—is no tax upon the land, the residuum, or pulp, after the expression of the juice, being returned to the farm for feeding stock. In this way a much larger stock of cattle is maintained, much manure produced, and the farm steadily benefited by the crop. Deep tillage, clean tillage, and high tillage, are enforced conditions, and wherever they are practised it is done profitably. The owners of a few reclaimed swamps in Louisiana, and of a few acres of "sugar bush" in Vermont, should not be the only ones benefited by the duties on sugar, when a large proportion of the farmers through the best parts of the Middle and Western States might enjoy the "protection," and share the advantages of the higher price of sugar.

Talks on Farm Crops.—No. 15.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

"I have known a fair crop of oats," said the Deacon, "sown as late as May 15, but, as a rule, in this section, if not sown before May 1, we stand a small chance of getting anything but straw."

"There are few crops," said I, "more dependent on the season than oats. If that is favorable, oats will stand much poor farming, and if unfavorable, it will tax all our skill to produce a large crop."

"We have comparatively few experiments," said the Doctor, "with artificial manures for oats, but those that we have, indicate that the manures best for wheat and barley are also best for oats."

"There can be little doubt on that point," said I, "but we might differ as to what manures are best for wheat and barley. All will admit that, where the soil has sufficient phosphoric acid and potash, available nitrogen is the one ingredient most needed."

"And yet," said the Doctor, "in the experiments quoted by Prof. Atwater, in the May No. of the *American Agriculturist* for 1877, page 171, nitrogenous manures did not increase the yield of grain, while they produced a greatly increased growth of straw. Thus the plot without manure produced 50 bushels of oats and 2,372 lbs. of straw. On the adjoining plot, with 357 lbs. of sulphate of ammonia, the yield was about 50 bushels of grain, and 4,049 lbs. of straw. With what is called a 'complete fertilizer,'—containing nitrogen, phosphoric acid, potash, and lime—the yield was 51 bushels of grain, and 4,387 lbs. of straw. Another plot, dressed with 178 lbs of nitrate of potash, 223 lbs. sulphate of ammonia, and 312 lbs. of plaster, produced 58 bushels of grain, and 4,176 lbs. of straw. This was the best yield in the field. The only practical conclusion to be drawn from the experiment is this:—So far as the production of grain was concerned, the land

was rich enough for the season. An addition of more plant-food increased the growth of straw, but had little or no effect on the grain. The oats on the 'no manure' plot weighed 43.2 lbs. to the bushel, while with a 'complete fertilizer' they weighed only 39.6 lbs. per bushel. This is additional evidence that a better 'season,' and not richer land was needed to produce a larger crop of grain."

"Well," said the Deacon, "what of it?"

"Simply this," said I. "Farmers have not merely to look to making the land rich, but they must get the crop in early. And to do this, the land must be drained, and made clean and mellow. Artificial manures are thrown away when applied to wet land. And it should be well understood that a dressing of manure, rich in nitrogen, might give us a large increase of spring wheat, barley, or oats, if sown early in spring, but if sown late, it may give us more straw, but a poor yield of grain. Mr. Lawes ascertained this fact a quarter of a century ago."

"But suppose," said the Doctor, "you had a piece of rich land, or land heavily manured, that you wished to sow to oats, but could not get them in early, what would you do in such a case?"

"Plant the field to corn," said I, "or drill it in with corn for fodder, or plant potatoes."

"Exactly," said the Doctor, "but this is dodging the question. I assume that you must sow oats."

"Very well, then," said I, "sow them, and run your chances. If your land is rich enough, you might find the oats a capital crop to cut and cure for hay. Where timothy hay finds a ready market at good prices, farmers can feed their horses much cheaper on oat-straw than on hay."

"That is so," said the Doctor, "but if the horses are at hard work you will need to feed more grain or bran with the straw than with the hay. There is nothing I like better for my horses, especially for a change, than to take oats in the sheaf, and run them through a feed-cutter. A quart of corn-meal, three times a day, mixed with the chaffed oat-straw and oats, will keep a horse in good condition, and, as you know, I have to drive my horses over heavy roads, and in all kinds of weather. Six pounds of this chaffed oat-straw contains about 2 lbs. of oats."

"When oats are to be used for this purpose," said I, "the crop should not be suffered to get fully ripe. When cut green the straw is more succulent, and if properly cured, the horses will not only eat it with a greater relish, but the nutriment it contains is more easily digested. We have a splendid climate for curing the crop. If cut with a reaper, and thrown off into sheaves, and after lying exposed for a day or so to dry, it is bound and stuck up into shocks, the crop can be cured to perfection with little risk. The sheaves can then be stowed away in a small compass, and are much easier handled and cut into chaff than when the crop is put in the barn loose like hay. Still the method of curing must be determined by circumstances. If I had plenty of barn-room, or if I had to put the fodder in a stack, and if the crop was very green, and badly lodged, I should cut and cure it as I would hay, or as I cure oats and peas."

While the Doctor and I were talking, the Deacon had picked up the bound volume of the *American Agriculturist* for 1877, and was studying Prof. Atwater's article on page 171. "I tell you," said he, "if you were going to raise oats for hay, these artificial manures would give you a great crop. The superphosphate did no good, but about 50 lbs. of nitrogen alone, gave an increase of nearly 1,700 lbs. of oats and straw, and nitrogen and potash an increase of over a ton of oats and straw. The crop without manure was nearly 2 tons per acre, and the crop with the nitrogen 2 tons 16 cwt., and with the nitrogen and potash 3 tons per acre."

"Yes," said the Doctor, "and I would quite as soon have it as 3 tons of timothy hay."

"And the crop," said I, "only occupies the ground three or four months, and after harvest you can plow the land and sow it to wheat. On the whole, oat-hay is a crop worth trying on rich land."

"I suppose," said the Deacon, "that the oats would often be sown on black, rich, alluvial soils, not suitable for winter-wheat, and in this case it might be desirable to seed down with the oats."

"If the land was very fine and mellow," said I,

"we should risk but little in sowing grass-seed, even as late as the middle of May. Much depends on the condition of the soil. I once had a capital catch of clover sown on winter-wheat late in May."

I have for fifteen years let my married men, who live in houses on the farm, plant a few rows of potatoes in the field, with my own crop. We plow the land, and do all the horse-work, but they furnish their own seed, and do the planting, hoeing, digging, etc. Once or twice my crop has been better than theirs; but, as a rule, they beat me. Why? is a question I have often asked myself, but can get no satisfactory answer. The land and preparation are the same, and the cultivation is the same—unless, possibly, the cultivator is held more steadily, and is not allowed to skim over the hard spots. Their crops are no cleaner than mine. In fact, sometimes not so clean, but it may be that the hoeing and hilling are done with more care. The more a farmer looks at his cows and sheep, and horses, the better they thrive. Possibly my men, in hoeing their potatoes, look at each plant with more interest than they do at mine, and give the hill a few affectionate taps with the hoe.

Then, again, we usually, though not always, mark out shallow furrows with a plow, plant the potatoes in the furrow, and cover with the plow—and if any are not covered with the plow, we go over the field afterwards and pull soil on to them with a hoe. My men cover their potatoes with a hoe, and probably do not cover so deep.

"And what is equally important," said the Deacon, "if not more, they take pains to get some nice, mellow surface soil to cover with, while the plow in some places turns up and throws on the potatoes soil that is cold and cloddy."

"I am inclined to think," said I, "that I have been in the habit of planting my potatoes too deep. But a great deal depends on the soil and season. Two years ago, the author of 'Among the Farmers,' in the November No. of the *American Agriculturist*, page 414, writing during a great and protracted drouth, which had almost destroyed the potato crop in his section, came to the conclusion that we had been neglecting early planting. The best crop in his neighborhood was one planted early and well tilled. The plants were well established before the beetles or the drouth seriously affected them. But he thought early planting alone was not enough. Deep planting was nearly as important. 'If the soil be reasonably deep and mellow,' he said, 'the seed may be placed six inches deep, though I would not advise or direct that it be planted more than five, for this would accomplish the setting of the seed probably at something over four inches. This depth is usually about right, yet in sandy land six inches is none too much.' I have acted upon the same idea. But I have made up my mind to plant shallower."

Another thing I have made up my mind not to plant or sow so deep—that is mangel-wurzel seed. Last year we had very dry weather at the time I dibbled in the seed, and wishing to put the seed down into the moist earth, I covered them two or three inches deep. Some that were planted shallower came up far better. An inch is deep enough, especially if the land is rolled after planting, as it always should be, and the fine soil pressed firmly around the seed. Even in severe drouths there is more moisture in the soil than appearances indicate. The point is, to make the soil fine and mellow before sowing, and then to roll down firm and smooth. In such a case the moisture from below will rise near enough the surface to cause the seeds to germinate—and if the seeds sprout, there is little danger of their being injured by drouth.

WINTER OATS.—Although winter oats would be a very valuable crop in the Northern States, and it seems reasonable to expect that they will grow under favorable circumstances, our experiment with them the past winter has not been such as to induce any further trial. As they were widely advertised in northern agricultural journals last season, we decided to give them a trial, which was done at considerable expense for seed and freight.

The winter has been a very favorable one for them—indeed, it could scarcely have been better. The lowest temperature has been 4 degrees above zero, and there have been many warm growing days. Yet nine-tenths of the plants are now lifeless, and the rest, though they survive, are in a poor, weak condition. At present, we do not think that southern winter oats are a promising crop north of Virginia.

Preparing Corn-Stalks for Fuel.

Where corn is burned as fuel, some saving may be made by using the stalks in place of the grain.

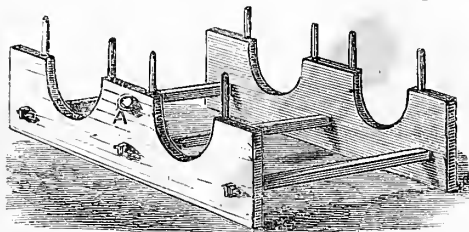


Fig. 1.—FRAME FOR BUNCHING STALKS.

The excellence of the ears as fuel consists in their solidity, and consequent slow combustion; while the great objection to the stalks is their lightness, and the rapidity with which they are consumed. If the stalks be pressed into small compact bundles,

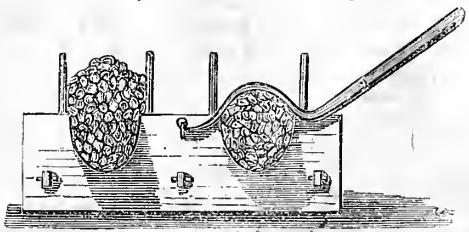


Fig. 2.—THE FRAME IN USE.

and bound with wire, they will burn much more conveniently. This may be done very easily. Make a frame of two pieces of plank, about six feet long, fastened together as shown at figure 1, and hollowed out to receive the stalks. The

bundle is kept in place by pins inserted in the holes shown in the planks. The planks may be about 18 inches apart, making the bundle about the same length. When the stalks, stripped of the leaves or not, are laid in the hollows, they are pressed tightly by means of a curved iron hook fixed in a handle, as shown at figure 3. The hook is inserted in a staple, shown at A, in figure 1, and the handle being pressed down brings the stalks tightly together, when they are bound with pieces of wire previously cut into proper lengths. The bundle is then moved on in the frame and bound again, and so on until the whole is made into a series of bundles, which are cut apart with an ax. At each place where the cut is made there should be two

Fig. 3.
HANDLE.

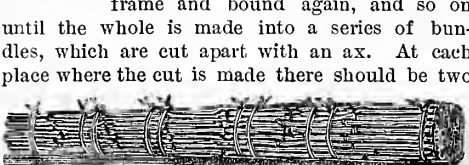


Fig. 4.—BUNDLE OF STALKS.

bands a few inches from each other, and the bundle is cut between these, (see fig. 4). The labor of preparing the stalks for fuel is less than that needed to cut and prepare fire-wood, and may be done under a shed during stormy weather. The bands, made of No. 12 or 13 annealed wire, may be raked from the ashes and used over again several times.

A Filter for Rain-Water.

A convenient filter for rain-water may be attached to the conductor from a roof at a point just above the surface of the ground, so that it can be reached easily, and where the pipe begins to curve towards the cistern. A box about two feet square may be made of cement, or of brick-work cemented

upon the inside. A shelf, or horizontal partition, of slate is built in the box, six inches above the bottom, and this is perforated with a number of small holes, to permit the water to pass through it freely. The slate may be easily perforated by means of a punch or sharp-pointed spike; if this is struck a quick blow with a hammer, a hole is readily broken through the slate. First place upon the slate, an inch or two of coarse, well washed gravel; upon this put a layer of clean, washed sand, and then, if thought necessary, some finely broken charcoal. Upon the top of these materials, some perforated slates are to be laid, to prevent washing by the falling water. The manner of making the filter is shown in the engraving.



FILTER.

Scare-Crows for Cornfields.

A ready method of protecting newly-planted corn-fields from crows, or blackbirds, is shown in figure 1. It is made of a light hickory, or other elastic stick, one end of which is stuck into the ground; to the other end is suspended a glass bottle, from which the bottom has been broken off. The cord by which the bottle is suspended passes through the neck; a nail is fastened to this cord to serve as a clapper, and so attached that it will strike the glass when the cord swings. A piece of bright tin, sheet-iron, painted shingle, or slate, is suspended to the end of the cord. When the wind blows, the suspended tin, or other article, is whirled in all directions, and causes the nail to rattle against the glass bottle.



Fig. 1.—SCARE-CROW OF BOTTLES.

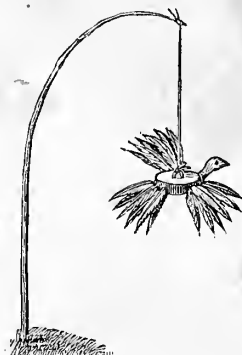


Fig. 2.—BIRD SCARE-CROW.

at three sides, so as to roughly imitate a dilapidated bird. Carve a rough head from a crooked branch, and arrange the tail feathers in an expanded position to catch the wind, by which it is caused to dart hither and thither in a most unexpected manner. This arrangement is shown in figure 2.

Green Crops for Cows.

The use of green crops for soiling cows is becoming absolutely necessary. Every dairy and milk farmer with whom we converse, admits that without growing green crops for fodder, his profits grow smaller every year, or his cows fail entirely to pay their expenses. One cow upon pasture and hay alone, requires about seven acres of ordinary ground. 12 to 15 cows are about all that can be maintained upon a hundred acre farm with pasture, hay, corn, and oats. The cost of average farm land in dairy districts is say \$100 per acre. The interest on the cost of seven acres, at 5 per cent, is \$35 per year, and the average profits of such farm land should be at least 5 per cent. Few farmers

can see any such profit as this from their cows, after charging expenses and labor, although some may realize as much. But if, by the better management of their business, farmers can keep one cow upon two acres of land, and can make a profit of \$25 to \$35 per cow per year, then the land will return a yield of \$12 to \$17 per acre, or 5 per cent upon a valuation of \$240 to \$340 per acre. Land, like other property, is valued in proportion to what it produces. In England, farm land is worth, on an average, \$500 per acre, and as it is held to be the most secure of all investments, a low interest return is satisfactory. But at this valuation, the rent of land produces from 3 to 5 per cent per annum. It is valued thus highly because it is made to produce large crops. If our land should be made as productive as that, it would easily bear as high a value. Thus the profits from our land, as well as its value, depend altogether upon the amount of the produce grown. The value of green fodder crops consists not only in the heavy products raised, but in the possibility of growing two or three successive crops in one year. The land is always busy, and is constantly producing something that can be turned into money, or its equivalent.

Cementing a Cellar.

Damp cellars are by far too frequent for comfort or health, yet they are easily kept dry. The most effective method is to cut a drain 10 to 20 feet distant on the side from which the water comes, and two feet deeper than the cellar bottom. This will cut off the flow of water from the sub-soil, and lead it away. But some cellars are so situated that no convenient outlet for a drain can be found, and some other method must be provided. In this case cover the floor of the cellar, and the sides, if necessary, with cement. The materials used are Rosendale cement, gravel, and sand. The tools required are a mixing-board and shovel, a rammer (fig. 2), and a smoothing-plank (fig. 3). The cellar-floor is first to be leveled, all hollows being filled up.

Two barrels of coarse, sharp sand are thrown upon

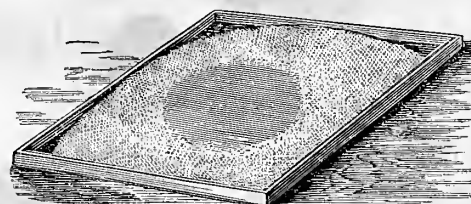


Fig. 1.—BOARD FOR MIXING CEMENT.

the mixing-board and mixed thoroughly with half a barrel of the cement, the whole being spread in a heap, hollowed in the center, as shown at figure 1. Water is thrown into the cavity in the center, and the mixed sand and cement is shoveled towards the water and mixed with it, more water being added until a semi-liquid mass is produced. To this is added, gradually, twice the bulk of coarse-gravel, small stone, or broken fragments, previously wetted with water, and the whole is thoroughly mingled together. Every particle of stone should be brought into contact with the cement. The mixed concrete is then shoveled on to the floor, beginning at one corner, in a layer three inches thick; and as soon as the



Fig. 2.—RAMMER.



Fig. 3.—SMOOTHING PLANK.

material has been spread and leveled with the shovel, it should be well pounded with the rammer

until the surface becomes covered with semi-fluid cement. While one batch is being spread, another should be mixing. If the walls need cementing to keep out water that may penetrate through them, this should be done with the mixed cement and sand, without the gravel or stone. As soon as the

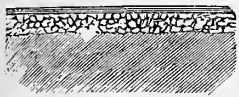


Fig. 4.—SECTION.

concrete is hard enough to walk upon, which will be in 24 hours, the finishing coat may be laid on. This consists of the cement and sand, mixed as already described. This is spread with the back of the shovel one inch thick, and is finished with a smoothing-board having a smoothly dressed and well oiled surface, made in the shape shown at figure 3. The piece of board should be about 3 feet long and a foot wide, and the handle so inclined as to be convenient to work with. When finished, the floor will appear in section as at fig. 4.

Improving Wet Meadows.

One of the most difficult of farm improvements is the reclaiming of swampy ground and overflowed meadows. At least it seems difficult, and

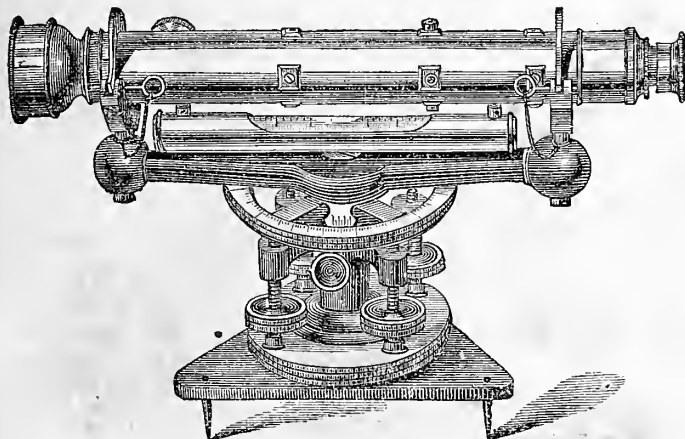


Fig. 1.—GURNEY'S FIELD LEVEL.

it is really the least satisfactory job a farmer can undertake, because its success depends upon more than usually skillful management rather than mere labor. To get rid of the water, drains are needed, and these must necessarily be made in such a way

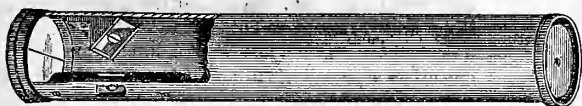


Fig. 2.—POCKET LEVEL.

as to lead the water, either to the lowest portion of the land, or from it altogether, into the nearest water-course. These wet lands are generally so nearly level, that it is often impossible for any but a practised surveyor, with his instruments, to decide which way the water will run in the drains, and it sometimes needs the surveyor's positive assertion to convince owners of such lands either that the water can be carried off at all, or as to the direction in which the slope actually exists. After much experience with swamps and wet lands, it may be stated that, as a general rule, there are very few indeed that do not admit of some form of drainage by which they may be brought under profitable cultivation as meadows. The possibility of this may be decided at little cost by the employment of a competent engineer who has made a special business of drainage and irrigation, and who thoroughly understands the work, or by the use of some simple and easy mode of leveling by the owner himself. Several methods of finding the level are described in "Stewart's Irrigation for the Farm, etc.," from which we reproduce the foregoing illustrations of leveling instruments. At figure 1 is shown a field-level, made by S. & W. E. Gurney, which is a very

accurate instrument. With this are needed a "Jacob staff" to set the level upon, and a sighting-rod, marked with spaces of feet and tenths of a foot

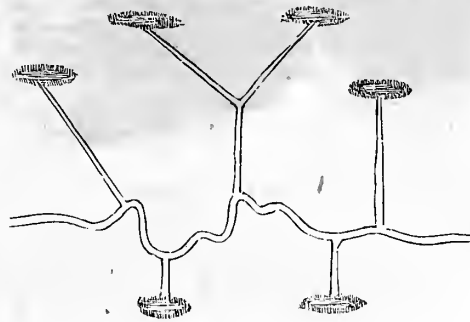


Fig. 4.—DIRECTION OF DRAINS.

(or inches) above and below a standard mark, which represents the height of the instrument above the ground when properly set and adjusted. At figure 2 is a pocket-level, which can be used where it is impossible to plant a staff, and if used with skill, this is about as effective as a more expensive instrument. With this a sighting-rod marked is used at the exact height of the eye of the operator from the ground, and with feet and inches above and below this, as shown at figure 3. This instrument contains a spirit-level, the bubble of which is reflected from a sloping mirror within it, and is made to appear as if on the object-glass at the end, where it is crossed by a fine wire. When the wire cuts the bubble in the centre, the sight is on a perfect level, and the point on the rod can be marked by the person who holds it. When a piece of wet land is to be surveyed for draining, it is necessary for the surveyor to stand with his level at the supposed outlet or lowest point of the ground, and to

take a sight across the space to the other side, or in different directions. He will thus find with ease the amount of inclination of the ground, which will generally be greater than has been suspected. For instance, in one case where the owner of a piece of wet ground insisted that a certain point was the lowest part of it, this was found on examination to be 5 feet higher than the opposite point, and the drains, when made, flowed with a good current in the opposite direction from that expected by the owner. When the lowest point has been found, the outlet for the water should be made there, and if there is no way of escape for it beyond that, a pond may be made there to collect it. The drains should be dug from this point upwards, and by observing the flow of water any ordinary laborer will be able to carry them



Fig. 5.—FORM OF DRAINS.

along on a proper grade. This should be such as will permit a free flow of the water. At figure 4 is given a diagram of the manner in which the drains may be laid out from the outlet—in this case a brook—to the highest point of the swamp. The

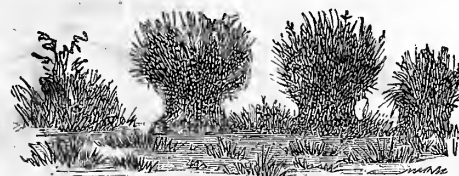


Fig. 6.—TUSsocks IN MEADOWS.

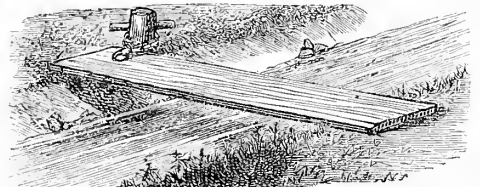
courses shown are the drains from the sources of the water to the brook, and may be made in the most direct line. The drains in all these cases

should be open ones, as there would be an almost certain stoppage of tiles in soft mucky ground where there is no more fall than 5 or 6 inches in 100 feet. The form of the drain is shown in figure 5. To facilitate the use of the ground for a meadow, the ditches should be wide and shallow; 6 feet wide, and 1 foot deep at the center, and gradually sloping to it, is the form found most convenient.

As soon as made, these ditches should be sown with seed, and grassed over. When the surface of the ground is overgrown with tussocks of coarse grass, it will be the cheapest and easiest plan to cut these off by hand with a broad, heavy, sharp hoe, before plowing the ground. Generally they are in the shape shown at figure 6, and are easily cut off with a heavy hoe. These may be burned, when dry, and the ashes scattered over the ground. If the ground should become dry enough to plow, that would be the best method of leveling the surface. The furrows should be begun between the lines of ditches, so as to throw up back furrows, or ridges, in the highest parts of the ground, and leave the open furrows where the ditches will be made. In most cases, by good management, and a clear idea of what is to be done all through the job, nearly all the leveling may be done by the plow, harrow, and scraper, and only needs to be finished off by hand.

A Simple Foot-Bridge.

On a recent visit to a farm through which a small brook ran, there was much trouble in getting across the stream. To prevent such a difficulty is a very simple matter, but any provision for this, is one of the rarest things to find, even upon well appointed farms. A permanent bridge is not desirable in such cases, because of the cost of a structure that would resist the frequent freshets, and the ease with



A SIMPLE FOOT-BRIDGE.

which a light bridge is carried away. The better plan is to provide a plank, 2 inches thick, a foot or more wide, and of whatever length may be required, and attach it by one end by a chain or rope, as shown in the illustration, to a stake driven firmly into the bank. The other end is left loose. When a freshet occurs the plank is only displaced by the water, but not carried away, and can be readily restored to position when the water subsides.

How to Raise Ducks.

Most farmers have a prejudice against water-fowl, especially ducks. They tolerate geese better than ducks, because they will forage for themselves, and live wholly on grass through the summer, after the goslings are started. Ducks will not bear neglect so well; they are more prone to wander and get lost or devoured in swamps or brooks. They have a foolish way of dropping their eggs in water, and of following a brook, or river, into neighboring farms; unless they have suitable quarters, and receive regular attention, it is a good deal of trouble to look after them. The half-starved duck disposes of a good deal of corn at a single feed, remembering the past, and anticipating the future. The slipshod farmer is prejudiced against the bird, and will have none of him. But the duck has so many good qualities, matures so early, and furnishes so rare a repast, that the owner of a country home, with cultivated tastes, can hardly afford to do without a duck-yard. The flesh, in our esteem, is the greatest delicacy raised upon the farm, and if they were much more troublesome than we have ever found them, we should not hesitate to keep them. The fact is, a large part of the trouble is owing to sheer neglect, and the reputation of the bird as a gross feeder is owing to irregular supplies

of food. If grain, or other food, is kept within reach, they devour no more than other fowls that mature as rapidly. If in suitable quarters, and well fed, they get most of their growth in four months, and can be marketed in August at the watering places when prices are highest. The impression that a pond, or brook, is necessary to raise the ducklings, is erroneous. They need no more water than chickens until they are three months old, and are better off without any pond to swim in. We have raised fifty in a season in a quarter-acre yard, and found them no more troublesome than chickens. The best mothers are hens, and we prefer the Asiatic fowls, either Cochins or Brahmas. A hen of these breeds will cover nine or ten eggs. We have found an old barrel, with a board at the end, to fasten the bird upon her nest, as good as a more expensive coop. They are let off regularly at noon every day, when they have a half hour's range, green food, grain, and water. The young ducks are fed with some fresh animal food, and coarse Indian meal scalded, and this, varied with chopped cabbage, turnips, worms, and liver, is the staple food until they are three months old. They do much better on soft food than on grain.—The paradise of ducks is a location on a tide water stream or cove, where there is a constant succession of sea-food with every tide. If furnished with a little house, or pen, upon the shore, and a variety of grain, they will come home regularly every night, and lead an orderly life. The eggs are usually laid at night, or early in the morning, and very few of them need be lost. Of the four varieties, Rouen, Aylesbury, Cayuga, and Pekin, we give the preference to the last for size, early maturity, abundance of eggs, hardness, and domestic habits.

A Plan for Filling a Wash-out.

A correspondent in Georgia asks how to fill wash-outs, which are so frequent upon hillsides in the Southern States as well as elsewhere.



Fig. 1.—SECTION OF GULLY.

Having had occasion to fill some of these unsightly gulleys, we adopted the following plan. Fig. 1 represents a very usual form of these hollows, which are to be first partly filled with stone or brush gathered from the most convenient point. If brush is used, it should be well packed and trodden down; if stone is used, the large ones should be thrown into the bottom, and the top covered with small ones. When the hollow is filled sufficiently with these materials, the ground is plowed from each side towards the center, gradually moving the earth un-

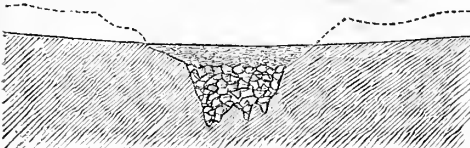


Fig. 2.—THE GULLY FILLED.

til a gentle slope is made, as at figure 2; the dotted line shows the original surface of the ground.

MORTALITY AMONG TURKEYS.—A correspondent from Fort Collins, Col., complains of great mortality among his turkeys. "They commenced dying off without anything, apparently, ailing them. They would go to roost at night, apparently in the best of health, and in the morning three or four, and sometimes eight or ten, would be lying under the roosts dead. Others would droop an hour or two, and then fall over. They had access to good water, and wheat and rye stubble, and were gaining very fast, and in superb condition. Of my flock of seventy-five, only five are now living. What was the matter?"—It is difficult, on these data, to state the exact cause, or to give a remedy. It is probable, however, that the cause of death was gorging with grain, found in the stubble, in addition to the insects which we suppose to be abundant in that

region. Without the stubble they might have escaped any harm. Our best turkey raisers feed about 4 o'clock in the P. M., to encourage the flocks to come home early, and give time for digestion before they go to roost. This regular supply prevents over-feeding, and the turkey crop is, with Eastern farmers, as sure as any other.

A Good Dog Law in Connecticut.

In Connecticut there were four deaths from hydrophobia in 1876, seven in 1877, and two already this year. Among the above were several prominent citizens. There has been paid annually, \$12,000 to \$15,000, or more, for sheep killed by dogs, while thousands of others have been maimed but not paid for. Though many parts of the State are specially adapted to raising sheep profitably, the fear of loss from dogs has nearly put an end to this industry. The above condition of things led the State Legislature, recently adjourned, to pass, with great unanimity, a stringent dog law, of which the principal provisions are the following:

Every dog kept must be registered on or before May 1st, of each year, and \$2.15 paid therefor, to the Town Clerk for each male dog, and \$6.15 for each female dog. Every dog must constantly wear around the neck a collar distinctly marked with the register number and the owner's name.—Every dog not so licensed and collared, is to be killed, and \$1 bounty is paid for the killing.—Any person keeping an unregistered dog may be fined \$7, or imprisoned 30 days, or both; and it is made the duty of Grand Jurors and all other prosecuting officers, to prosecute any violation of this act.—All damages done by dogs to sheep or lambs, or cattle, are to be paid for by the town, and collected in full from the owners of the dogs. Any person killing a registered dog, unless such killing be justifiable for the protection of life or property, is liable for the value of the dog, as established by competent evidence, and to a fine not exceeding \$7, or imprisonment not exceeding 30 days, or both.

The European Sparrow—Is It a Friend or an Enemy of the Horticulturist and Farmer?

BY DR. H. A. HAGEN, PROFESSOR AT HARVARD UNIVERSITY.

[But a few years ago, European Sparrows were hailed as the greatest boon to fruit growers, and were eagerly purchased from importers at \$4 the pair. Within the past two or three years the bird has been as positively decried, as it was before extravagantly praised. The Sparrow controversy has been especially active in Boston and vicinity, and the literature, pro and con, is already voluminous. A decision adverse to the Sparrow, given by the "Nuttall Club," an association of young ornithologists at Cambridge, Mass., has induced Doct. Hagen to enter his protest. Doct. H. is one of our highest authorities in Natural History, and is connected with the "Museum of Comparative Anatomy" (founded by Agassiz) as entomologist. He addressed his defence of the Sparrow to our first ornithologist, Prof. S. F. Baird, of the Smithsonian Institution, who forwards it to us with this remark: "It is time, I think, that something should be said in defence of the Sparrow against the numerous attacks that have been made upon it. Without pretending to form a judgment in the matter, I am anxious to see both sides represented. The leading Natural History weeklies have done little else than abuse the Sparrow, and I would like to see Doct. Hagen's protest placed on record."—We here give the article referred to.—ED.]

The decisions of the "Nuttall Club," of which a report is given in No. 18 of the "New York Country," are based upon observations contradicting in several points the older ones, which are accepted by science, in the most decided manner. It appears by the report, that the Club either had no knowledge of these earlier observations, covering a space of more than a century, and sustained by ornithologists of well known reputation, or that it

did not deem it worth while to compare its own observations with the earlier ones, which ought to have been done to fulfill the well known demands of science. The Sparrow literature is large, and opinions during the past century have considerably changed, until the final decision is most decidedly favorable to its value.

I will select only three authors, who are ornithologists, each one an authority for the economic natural history of his time, covering a space of a hundred years, and showing the gradual progress of the opinion as to the value of the Sparrow.

Mr. T. F. Bock, in 1784, considered the Sparrow simply as a nuisance, so injurious and obnoxious, he demanded that the Legislature should be applied to for its destruction; this was carried out several times with such a pernicious effect, that the Sparrow had to be introduced again. It is not necessary to give Mr. Bock's decisions, as they are exactly identical—the carnivorous and murderous habits excepted—with those of the Nuttall Club in 1878.

Mr. F. M. Bechstein, in 1795, says: "The food of the Sparrow, insects and grains, indicates him to be beneficial as well as injurious. In spring, he visits all fruit trees, collects caterpillars from the leaves and flowers, and kills an exceedingly large number of May-beetles to feed his young. In summer, he lives on the seeds of lettuce and of spinach, on young peas, cherries, grapes, and berries. In the fall, he goes into the grainfield and eats a large quantity of ripening or ripe grain. The greatest benefit he confers is in the destruction of innumerable noxious insects, May-beetles, pea-grubs, caterpillars, and grasshoppers, to feed his young." The Sparrow is from this not so injurious as he was declared to be in former times, and upon the whole is certainly more beneficial than harmful. I know towns where Sparrows were killed as injurious, but the fruit trees there never had fruit, though other towns in the neighborhood had plenty of it. The cause was, that the caterpillars were not killed by the Sparrows. Through loss came wisdom; the Sparrows were again introduced, and it was found more profitable to protect the fruit trees and vines against their depredation by simple artificial means.

Dr. C. W. L. Gloger, in 1858, says: "The formerly much-abused Sparrow is often an impudent fellow, but he eats insects as long as they are to be found. With some predilection, he collects leaflice from the buds of shrubs, and trees, and feeds his young with caterpillars. Certainly the Sparrow merits well the few berries and grapes which he steals, as he protects so many other fruits, which he leaves untouched. In former times people were shortsighted enough to hunt and to kill the Sparrow; now opinion has changed. All intelligent horticulturists especially, will never persecute the Sparrow." Among the large number of books on horticulture, there is not one, which even excuses, much less commends, its destruction. If the Sparrows were injurious, they would be much more so for horticulturists than for farmers. The stomach of the Sparrow, in fall or winter, is rounded with seeds of weeds, which is certainly more than an equivalent for the grain stolen in summer.

These opinions are based upon observations made through a century, and supported by authors of acknowledged reputation, while the decisions of the "Nuttall Club" are given after only the observations of a few years. I would only object to a few observations given in the report, the rest being sufficiently answered by the above extracts.

The report states "the Sparrows to be carnivorous birds, eagerly destroying and devouring eggs, and newly-hatched young of other birds." It is well known to every naturalist, what science understands by the term "carnivorous birds," and it is well known that Sparrows do not belong to them. This term, as applied to the Sparrow, is decidedly out of place in the report of an Ornithological Club. The other part of the quotation reminds me of a quibble a century old. It was said that "the Sparrow invades the nests of pigeons, to eat open the crop of the young ones, and to feed upon the grain contained in them—when he needs it." Of course it was understood that he never needed it.

The report says further, "The decided preference

for fruits and leaf-buds (the last observation is an original one of the "Nuttall Club"), renders them decidedly a pest to horticulturists." As this statement, if true, would be alarming for horticulturists, I should be very glad if the above quoted contradictory observations of Beechstein and Gloger would find a place in some prominent paper or magazine devoted to the interests of horticulturists. But I can give them some farther consolation. It is, perhaps, not commonly known to what an extent the horticulturists here find it profitable to depend upon German horticulturists. In 1867, wishing to send home a set of flower seeds, I went to the most prominent dealers, stated my purpose, and got the answer: "We import all our seeds from Germany." In 1874, I was asked by a friend to send the seeds of the American native Pine-trees. After going around in Boston, without success, I wrote to New York, Philadelphia, and St. Louis, and had from all the same answer. Now, when American dealers find it profitable to import seeds from Germany, and German dealers find it profitable to export them, it is rather obvious that the Sparrows, so exceedingly common in Germany nursery gardens, can not be a pest there, and consequently will not be a pest here. A book commending the persecution of Sparrows would at this day be considered by intelligent German horticulturists as a curiosity. The argument suggested in the report of the "Club," that the help of the Sparrows is not needed for the suppression of the Canker-worm, because various effective devices exist for the protection of fruit and shade-trees, decidedly loses its value, when summer after summer we have seen those devices applied with care, and in spite of these the foliage was destroyed—except where Sparrows were present in sufficient number to check it. Prominence has always been given to the alleged fact, that the Sparrows drive off indigenous birds. According to my personal observation in Cambridge, and other suburbs of Boston, this is not true. When I arrived here in 1867 I was surprised by the scarcity of birds in such a large number of beautiful gardens and splendid grounds. The following spring, I was able to understand why birds were so rare here, as I saw and heard, morning and afternoon, around and very near to the Museum, and elsewhere, the shooting of every kind of bird. I saw boys plundering the nests of the most valuable insect-eaters, Robins not excepted, and I also saw target-shooting in the open field; the target fastened to large trees, upon which were birds-nests. During recent years the protection of Sparrows has surely saved the native birds, and I have never seen in Cambridge more native birds, and never heard more beautiful song birds than in the summer of 1877. Concerning the diminished number of native birds in the Smithsonian grounds in Washington, recorded in the report of the Club, I am assured that one of the foremost American Ornithologists denies it to be the fact. After all, it should not be forgotten that by the rapid increase of the cities (Cambridge has more than twice as many inhabitants now as it had in 1867), and with the incessant disappearance of trees and shrubs, some kinds of birds may prefer to go to more secluded places.

The argument that Sparrows drive other birds out of the bird-boxes, is a rather funny one, when it will be remembered that all those bird-boxes were placed only for the Sparrow. I think every bird will fight for its home, nevertheless I observed, in 1877, Sparrows driven out of the box which they had used the year before by Swallows, which raised their young safely among a dozen of boxes near by used by Sparrows. In a box in the garden at the corner of Broadway and Harvard St., a pair of Sparrows and one of Swallows settled last year together. The box had only one entrance, through which both had to pass, and as there were two glass windows in the box, both nests could be observed, and the young of both were safely raised. If, as it seems to be the case, that native birds prefer now to breed in bird-boxes, which they did not and could not do here in former years, it would be simply reasonable to place more boxes everywhere, and as is done in Europe, different sizes for different kinds of birds.

Nobody has ever contended that the Sparrow is a beauty or a charming singer. Indeed, he is only

an indefatigable business man, minding first his own affairs, as is not uncommon among business men. But he is admirably adapted for his business—which is to destroy insects; he is very enduring, staying through the winter, when few other insect-eating birds are here; he begins to breed much earlier, and breeds much oftener, than other birds, and is, therefore, more able to give an effective help in the destruction of insects and weeds. But it is true that he should be supported, as Mr. Allen remarks judiciously in the report, through enforcing, by statutory enactments, the protection of the fruit and shade trees by all available means.

As no naturalist would pretend, that a bird, by importation into a foreign, but similar, climate, could entirely change its character in a few years, the Sparrow question will probably here go through the same, though briefer, stages of opinion as in Europe. I consider the Sparrow to be a valuable addition to the native birds, and most certainly beneficial for both horticulturists and farmers.

A Wisconsin Barn.

"E. T. C., Dane Co., Wis., sends a plan of a style of barn which is common in his neighborhood, and is found satisfactory to the farmers there. It is 60 feet long, 32 feet wide, with 18 feet posts. It has four bents, with a granary at one end, and a

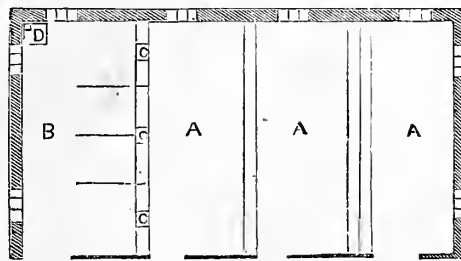


Fig. 1.—PLAN OF BASEMENT.

stone basement, 8 feet high, under the whole building, with sliding windows in the basement. Figure 1 shows the plan of the basement. There are three cattle stalls, A, A, A, each 14x32 feet, and having 10 stanchions; at B is the horse stable, 18x32 feet,

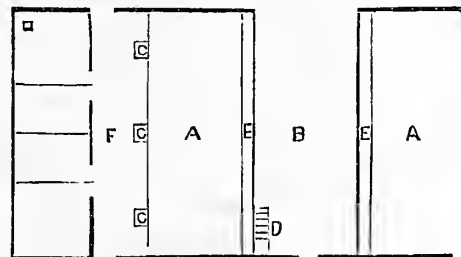


Fig. 2.—PLAN OF SECOND FLOOR.

for 6 horses; at C, C, C, are 3 hay shoots, 2 feet square, passing from the manger to the floor over the granary; at D is a box, 3 feet square, with spout from the oat-bin in the granary above. Figure 2 shows the plan of the second

floor; at A, A, are 2 hay bays; at B is the rive-way; at C, C, C, are the hay shoots; at D is the stair-way; at E, E, are spaces on each side of the drive-way for throwing hay down to the cattle; at F is the granary. Figure 3 shows the plan of the hay-bay over the granary; C, C, C, being the tops of the hay shoots. All the doors in the building are hung upon rollers. The granary is made of matched boards, and the walls are lined in the same way between the studding and the siding. The basement is floored with plank, with a 2-inch drop behind the horses, and a 4-inch drop behind the cows.

Fig. 3.—PLAN OF HAY-BAY.

The granary is made of matched boards, and the walls are lined in the same way between the studding and the siding. The basement is floored with plank, with a 2-inch drop behind the horses, and a 4-inch drop behind the cows.

HEALTH OF CATTLE.—Here and there we hear of cases of lung-fever, "pleuro-pneumonia," among dairy cows. It is wise to use every precaution to avoid this disease. That it seems to originate in dairies in sporadic cases, would go to prove that,

like cholera and other general diseases, it is not "in the air," as is frequently supposed, but that it is caused by some conditions, which arise from the state of the stables, or the animals themselves. Damp, foul air, uncertain and changeful temperature, and the breathing of fetid emanations from filthy stables and manure heaps, all tend to poison the blood, and this is a true blood disease, as may be proved from the fact that it can be spread by inoculation. To prevent disease by observing every sanitary precaution, is always possible, and in case of this dreaded disease, we have little fear of its appearance if these precautions are generally observed. Once started on its course, however, there is no doubt of its contagious character.

Broad Tires to Wheels.

The condition of the roads the past winter, has done more to commend broad-tired wheels, than all the arguments that have ever been uttered. The soft roads have been so cut up with the 1½-inch wagon-tires, and these have sunk so deeply in the mud that, in some places, travel has been impossible for weeks at a time. Those who have been thus mud-bound, are now convinced that it might have been better for them had the tires of their wagons been 3 or 4 inches wide; but they are still in doubt about the ease of draft of these broad wheels. Now, it should be evident that a broad wheel, that will not sink into the ground, is of much easier draft than a narrow one that cuts in two or three inches. The difference in draft of a narrow and a broad wheel upon the hardest, smoothest road is inappreciable, and it is a matter of doubt if it is in favor of the one or the other. Theoretically, there may be a difference, to a small extent, in favor of the narrow tire, but as our roads are far from being hard or smooth, the difference of draft will be decidedly in favor of the broad tire. A load of manure can be drawn across plowed ground in a broad-tired wagon, by a team that could not move it in one with narrow tires, and the softer the ground, the more apparent will be the difference in favor of the broad wheels. It is to be hoped that the manufacturers of wagons will make the experiment of offering wheels with broad tires; we believe they would soon become very popular.

THE LIGHT BRAHMAS.—In a pretty large experience with fowl raising, for the last thirty years, we have tried many sorts, new and old, and have settled upon the Light Brahma as the best fowl for villagers and farmers. They are a long time in coming to maturity, but there is no difficulty in getting nice broilers from them, in July and August, or in getting eggs from the early pullets in the fall, and that is about all that can be done with the earlier varieties. Well fed pullets, beginning to lay in November, in warm quarters, will give an abundance of eggs through the winter, when they bring the best prices. They are the largest breed with which we are acquainted, adult cocks sometimes weighing 13 to 16 lbs., and hens 10 to 12 lbs. The flesh is of good quality, and when one comes to the table, there is enough to go round and some to spare. They are the most popular of all varieties, tested by the demand for breeding fowls and eggs. *

VALUE OF JERSEYS.—A public sale of a number of imported Jersey cows, in the City of New York, at an average of over \$400 each, shows that this class of stock is not deteriorating in value. An examination of the cows sold, satisfies us that a lot of equal quality could be picked up in almost any county, where there is a fair sprinkling of Jerseys, at a less price than \$400 each. These, however, were imported, and it seems to be true, now as ever, "that a prophet is not without honor save in his own country, etc." There are Jerseys now in America, and scores, if not hundreds of them, that are better than any we see imported, and no other milking stock is so rapidly taking hold of the farmer's fancy as grade Jerseys, especially for butter dairies. The greatest value of a pure breed is in its use for crossing, and the American farmers are fast finding out that the grade Jersey (or Alderney, as it is often wrongly called) is a very valuable cow.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

OPEN DITCHES.—Intermittent, or occasionally flowing streams cannot be carried off by under-

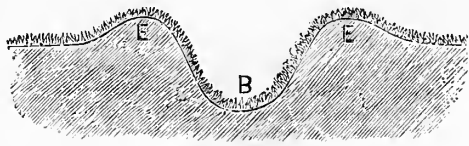


Fig. 1.—USUAL FORM OF DITCH.

drains, on account of the large quantity of water brought down by them at certain seasons. Open ditches are, therefore, necessary to conduct away the water of these courses. Generally, these open



Fig. 2.—IMPROVED FORM OF DITCH.

ditches are a nuisance, because of their improper shape. The usual form is that of a hollow, *B*, fig. 1, with ridged banks, *E*, *E*, by which the ground is made useless when the stream is dry. In the form

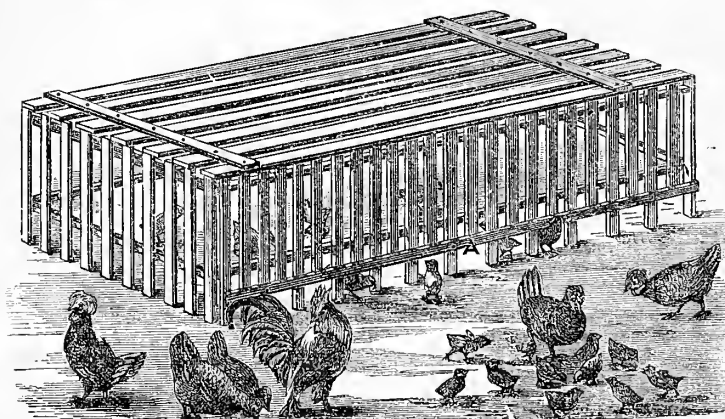


Fig. 3.—PORTABLE FEEDING COOP FOR CHICKS.

shown at figure 2, there will be no obstruction to the passage of wagons or mowing machines, the grass in them can be mowed, and the sides and bottom being turfed over, there will be no washing.

A PORTABLE FEEDING COOP.—A coop in which

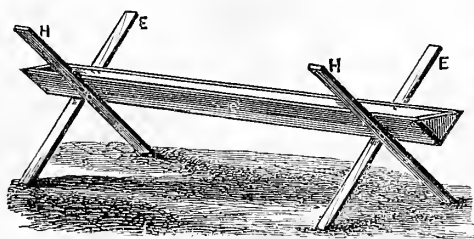


Fig. 4.—REVERSIBLE FEEDING TROUGH.

young chicks, that are permitted to range with the large fowls, may be fed without interference by the others, may be made as shown at figure 3. Common laths are sawn into proper lengths and nailed to a frame, three inches space being left for the chicks to go in and out. On one side the laths are cut off six inches from the ground, and a strip, *A*, 3 inches wide, is secured so as to be raised as the chicks grow larger, to permit them to pass under it. If made 10 feet long and 5 feet wide, it will accommodate 200 chicks. The frames for the sides and ends may be attached to each other by pins, or hooks and staples, and when not in use, they may be taken apart and packed away, until again required.

A FEEDING TROUGH.—A device for keeping feed-troughs free from dirt, rain, or snow, is shown at figure 4. Supports are attached to the trough, and extend above it, as at *E*, *E*, *H*, *H*. When the trough is not in use, it may be tilted over so that it will be kept free from water, or rubbish, and always be in a proper condition whenever needed for use.

DIBBLES FOR POTATO PLANTING.—When plant-

ing potatoes in rows or hills, the holes for the sets may be made very easily by means of the dibbles shown at figures 5 and 6. The first is made of a piece of hard-wood, $3\frac{1}{2}$ feet long and 2 inches thick, bluntly sharpened at one end. Pins, *A*, *A*, 10 inches long, are inserted near each end, one intended for a handle, the other to be pressed with the foot into the soil, by which the hole is made. The second is similar, excepting that a piece of iron is screwed to the wood for a step, on which to place the foot. By changing the place of the lower pin, or the step, the depth of planting may be regulated.

A CONVENIENT FEED OR GRAIN-BIN.—A feed or grain-bin, made as shown at figure 7, will be found very useful; it is divided into three compartments, and the shelf above will be a convenient place for measures or scoops. It will tend greatly to save feed if the box is provided with lock and key.

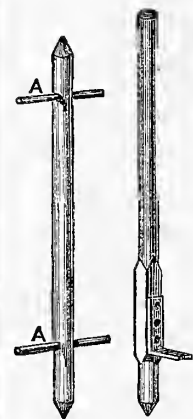
A USEFUL CORN-MARKER.—A corn-marker, which will adapt itself to any uneven and stony surface, may be made as follows: A bed piece, *R*, fig. 8, five inches square and 10 feet long, is provided. The marker-holders, *P*, *P*, four feet long and four inches square, are attached to the bed-piece by wooden pins 2 inches thick, *A*, *A*. The markers, *E*, *E*, are 10 inches long and 3×4 inches thick, and are fastened to the holders, *P*, *P*, by 2-inch holes near the ends. The markers are beveled at the bottom, to facilitate their passage over obstructions and make a more distinct mark. At *B*, *B*, are up right sticks, 3 feet long, by which the marker is guided in a straight line by the driver. At the ends of rows, the marker is lifted around by the rear handles.

HITCHING POSTS AND RINGS.—A double hitching post is shown at figure 9. It is made of two posts set in the ground and joined together by a cross-piece, mortised into them. This makes the posts

very firm, and not easily loosened or torn out of the ground. Different forms of single posts are shown at figure 10. These require no description. Rings, which may be fastened into posts or barn timbers, are shown at figure 11. One of these is made to screw into the timber; the other is fastened by a staple having notches in it, to render the hold secure.

Improvement of Corn

This being the month for planting corn over a large portion of the Northern States, some remarks about the means of improving this grain are timely. No crop that we grow has such promising possibilities as this, none is grown with less care as to its improvement. The general yield over the United States, is from 25 to 45 bushels per acre. At the



Figs. 5 & 6. DIBBLES.

rate of 100 ears to a bushel of shelled corn, this is from one to two ears to two square yards, or only about one ear to a hill under ordinary methods of cultivation. Generally three, and sometimes two, stalks are left in each hill. There are then a large number of barren plants produced. If each stalk bore one good ear, the yield would be from 50 to 150 bushels of grain to the acre. If we could produce three or four ears to one stalk, and leave but one stalk to a hill, with hills $3\frac{1}{2}$ feet apart (3,555 hills to the acre), we should gather from 100 to 140 bushels of grain per acre. If we could grow of the common northern field-corn, three ears to a hill,

that is, one ear to every stalk, with hills 3 feet apart, we should gather 145 bushels per acre. The advantage and profit from such cultivation is ap-

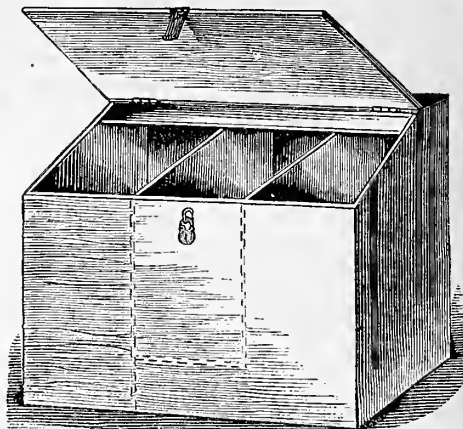


Fig. 7.—BIN FOR GRAIN OR FEED.

parent. The question is, how can we produce such a yield as this? It is well worth the effort to try to do it. Vegetables and animals reproduce their kind under somewhat similar laws. Like produces like in both cases. There are shy bearers in both plants

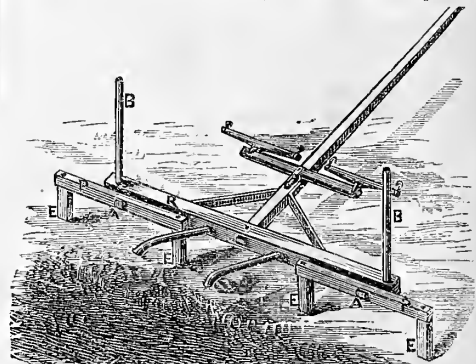


Fig. 8.—A CORN-MARKER.

and animals, but we quickly weed out of our flocks and herds the non-productive portion. If we could do the same with our corn-plants, and prevent the barren stalks from shedding their pollen upon the productive ones, we should apply the same rule which stock-breeders enforce in their yards and pens. We might go further than this, and choose



Fig. 9.—DOUBLE HITCHING POSTS.

seed from the most prolific stalks of a previous year, selected in the field; plant these in highly fertilized soil; cultivate the crop perfectly; remove the tassel from each stalk that has no ear, before the pollen is shed; and see that every ear that shows the silk is fertilized with pollen from a pro-

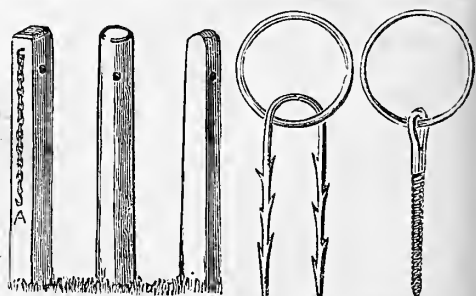


Fig. 10.—POSTS.

Fig. 11.—RINGS.

ductive plant. If this be carefully done for several years in succession, there can be no doubt that the effect upon the production of the crop and the value of the seed, would be highly beneficial.

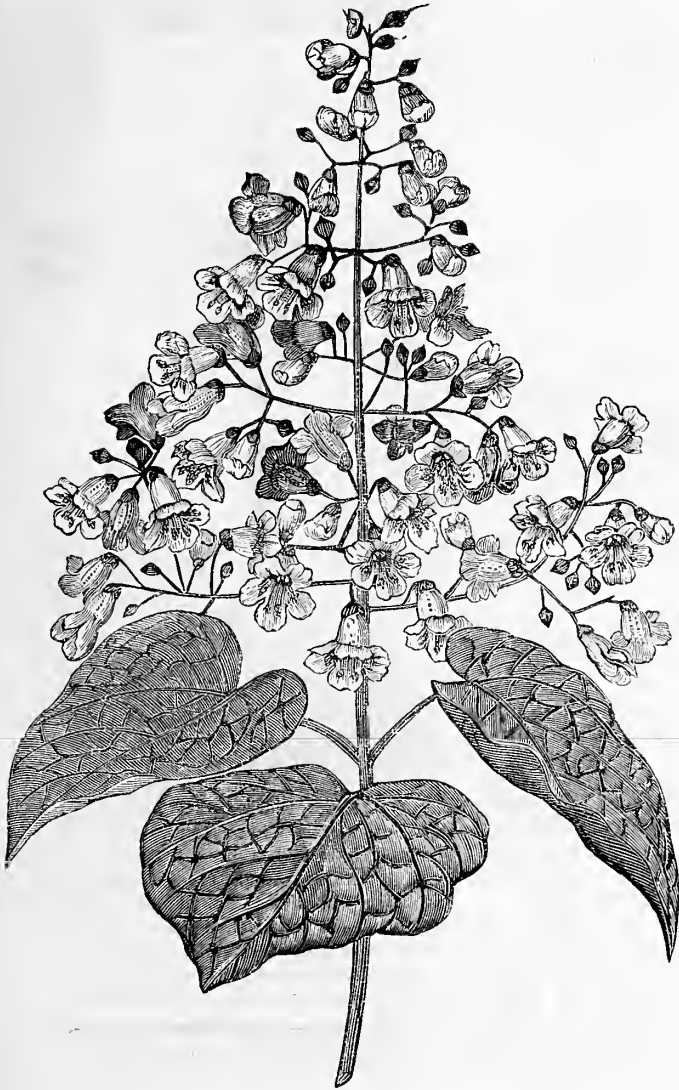
The Catalpa and Its Uses.

As indicated in an article by Prof. C. S. Sargent, on p. 142, last month, the Catalpa is likely to receive much more attention at the hands of tree-planters than heretofore. One would suppose that a tree so widely planted for ornament would be generally known, yet there is scarcely any tree that

Boys often amuse themselves with the pods as substitutes for cigars, the cottony wings to the seeds giving an abundant, and probably innocent smoke. As an ornamental tree, the Catalpa, with many merits, has some faults. As already mentioned, its naked branches are unsightly, and the leaves are among the latest to appear, while they drop with the very first frosts. Its bark, when wounded or cut in the spring, is said to emit a very offensive

odor. The honey collected from its flowers is said to be poisonous, though we have seen no direct evidence upon this point. The name, *Catalpa*, is supposed to be derived from the Indians; it was originally described by Walter as *C. bignonioides*, from the resemblance of its flowers to those of the *Bignonia* or Trumpet-creepers; later botanists have called it *C. cordifolia* and *C. syriacaefolia*, but these, according to the rules, should give place to the older name. It belongs to the Bignonia Family. Our principal reason for briefly describing the Catalpa, is on account of its economic importance. In most works on trees, its timber is briefly mentioned as "lasting," though Mr. Arthur Bryant in his work gives more importance to this quality, stating that he is assured that posts "have stood for 40 years without the appearance of decay," and advises its cultivation "to a limited extent." Probably the earliest advocate of the Catalpa was General Harrison (afterwards President), who, in an agricultural address at Carthage, O., in 1825, advised farmers to cultivate it on account of its great durability for posts, etc.

especially as to durability when exposed to the weather, or in contact with the earth. As to climate, Mr. Foster thinks that the common kind can not be depended upon north of St. Louis, while the variety just mentioned has endured the severest winters of Iowa and Illinois without the least injury. That a variety in the color of the flowers, leaves, or fruit of a plant, is often accompanied by a difference in hardiness, and that some varieties are more hardy



THE CATALPA.—(*Catalpa bignonioides*.)

we are more frequently asked to name from specimens sent, than this. It is essentially a southern and south-western species, finding its northern limit in Southern Illinois and Indiana, but cultivated much farther northward. In exposed situations in northern localities, the tree is not seen at its best; the head is often very irregular from injury in severe winters, or the breaking of the branches by violent storms, and when naked is anything but an elegant object. When the abundant leaves appear, these deformities are hidden, and the whole aspect is changed. The long-petioled leaves, either opposite, or three in a whorl, are large, heart-shaped, downy on the under side, and of a peculiar shade of green. The flowers appear in June and July in large open panicles, often a foot long, and are produced in such profusion that a specimen in full-bloom is a most pleasing sight. The individual flowers are about an inch long, elongated bell-shaped, with a wavy 5-lobed border, and somewhat two-lipped; they are white, and generally tinged with violet, and spotted within with yellow and purple dots. The flowers are succeeded by long, slender, cylindrical pods, often a foot, or more, long, which hang until spring, and are so conspicuous, especially after the leaves have fallen, that in some localities the tree is known as the "Indian Bean." The pod is divided lengthwise by a partition, forming two cells, which contain numerous very flat seeds, having on each side a wing, which is much cut, and appears like a fringe.

He, when Governor of what was then the North West Territory, found Catalpa pickets in the old French stockade at Vincennes, which were yet sound, though they must have been in place for a century or more. Later, Doctor Warder and others have given testimony as to its value. Mr. E. E. Barney, of Dayton, Ohio, has, as mentioned last month, done excellent service in collecting the scattered testimony as to the value of the timber of the Catalpa, adding to it important notes of his own, and presenting the whole in a pamphlet. Mr. Barney calls attention to the fact, first pointed out by Doct. Haines, of Dayton, that there are two varieties of the Catalpa; one blooms two weeks earlier than the other, has larger flowers, which are nearly pure white, with larger, longer, and fewer seed pods. Mr. Snel Foster, a well known horticulturist of Muscatine, Iowa, has also noticed this difference, and found the early-flowering form to endure a winter which killed the ordinary kind. He proposes to call this form "*the hardy*," and the later blooming "*the common*" Catalpa. Those who contemplate tree-planting will do well to procure the pamphlet referred to (which Mr. Barney generously supplies for two 5c. stamps), as we can here only briefly sum up the evidence there presented. The valuable qualities of the tree are: ease of propagation; adaptability to various soils; rapid growth; freedom, so far as known, from the attacks of insects, and the great value of its timber,



THE SLENDER-LEAVED LILY.—(See next page.)

than the type, is well known to cultivators, and is by no means peculiar to the Catalpa. The seeds are sown in spring in nursery rows, thinned to about a foot, and transplanted when one or two years old, as may be most convenient. In the plantation they are set four feet apart each way; close planting is necessary to insure a straight, clean trunk. In 12 years, each alternate row may be cut out for telegraph poles or fence-posts, and in about 12 years more the remaining trees, in good soil, will make six railroad ties each. Mr. Barney estimates that at the present prices, a plantation of Catalpa will make a return of \$25 per acre for each year of the whole time that the trees occupy the ground. Those who have only seen isolated and scraggy specimens, can have little idea of the Catalpa as a forest tree; in favorable localities it has reached a diameter of three and even four feet, with a clean trunk of 50 feet, without a branch. The trunk of this tree is preferred in the south-west for making dug-out canoes, as they neither crack nor decay. The great durability of the timber seems to be well established, and several instances are cited in which posts set in the ground, or logs laying upon it, have been exposed from 70 to 100 years without perceptible decay. The great demand for the timber will be for railroad ties; for this use it should resist the crushing effect of great weight, as well as decay, and should also be able to hold the spikes firmly; so far as tried, the Catalpa ties have proved, when

tested side by side with ties of oak, perfectly satisfactory in these respects. One great advantage of the Catalpa over most other woods, is the inappreciable amount of sap-wood, or "sap," as the immature, recently formed outer layers of wood are popularly called. This, even in cedar and other trees, the heart-wood of which is durable, decays rapidly, but even small stakes of the Catalpa suffer no appreciable loss from this cause. Besides durability, Catalpa-wood possess beauty to a remarkable degree; its general color is a warm buff, the "silver grain" being straw-colored; it takes a fine polish, and is well suited to interior finishing and cabinet work. Mr. Barney, who is known at the West as "the Veteran Car-Builder," sends us specimens of the wood, cut in different directions, with one surface polished; one of these is from the lower end of a bar-post that is known to have been in the ground for 75 years, and though stained a little darker, is quite as sound as the others from trees cut last year. All present a beautiful polish.

One Grape Vine.

SECOND ARTICLE.

In heading our article last month, "One Grape Vine," we did not intend to imply that but one



Fig. 1.—VINE AS RECEIVED.

vine should be planted. The idea we had in view was, that whoever would plant and watch the growth of one vine, would understand about one other vine—one dozen, one hundred, or more vines. Much mystery has been thrown about the culture of the grape, by those who, not finding the old names given to the parts, sufficiently learned, have

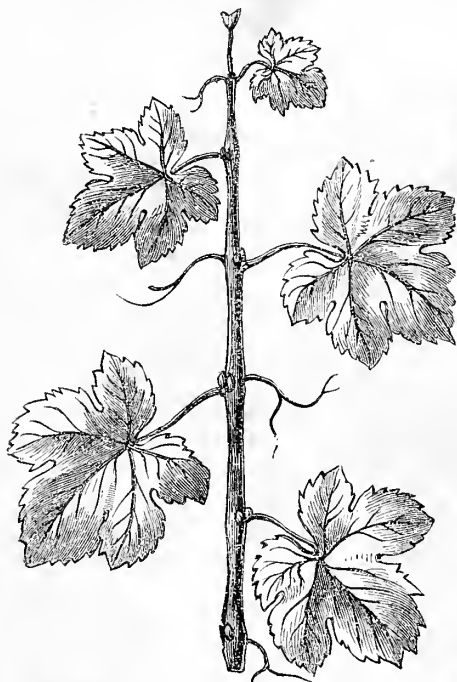


Fig. 2.—A YOUNG SHOOT.

introduced new names for very common things. Then again the jobbing gardeners who go about, and who, unfortunately, are employed in cities and villages, put on wonderful airs. If called to treat

a vine, it is sure to have been treated badly before, and only their skill can save it, and they haek away at it, while the owner pays the bill. Now there is nothing simpler than the manner of growth of "One Grape Vine," and as one vine grows, so do all the rest. There is nothing about it that the farmer or villager, or that the boys or the girls of the villager or farmer can not understand if they will. There is no mystery about the management of a vine. One only need to know its way of growing, which can be learned from "One Grape Vine," as well as from one hundred. To go back to last month, and for convenience we re-produce figure 1, here, which shows the vine as it will be received from the nursery and planted. As it comes, it will be a dead-looking stick, with three or four prominent swellings, or buds, and a root at one end. Planted, as directed last month, these buds will start to grow, and as we then advised only one, and this one the most promising of these, should be allowed to grow. This will push out a green, and at first very tender shoot, which should be handled carefully, and be kept tied up to a stake. Now what have you in this Shoot, or Stem? Watch it as it develops and see! As the shoot grows you have a Leaf, opposite that a Tendril, to help hold up the shoot; then several inches of stem, and on the other side from the first, another leaf, with a tendril against it, and so on, as long as the shoot grows. The whole shoot is made up of, one after another, a length of stem, three to six inches or so, and a swelling, at which appears on one side a leaf, and on the other side a tendril, as in figure 2. [By some oversight, the tendril opposite the lower leaf has been omitted, it should be there.] This point where these sections of stem join, and at which leaf and tendril are attached, is a Node, the space between the nodes, an Internode, though it is popularly called a "joint." Should the vine happen to be a very strong one—and this will be seen on all fruiting vines, there will be the leaf, and, instead of the tendril, a bunch of flowers, to be followed by a cluster of grapes, as in figure 3. The tendril is then a part of the vine with a double use. It may serve to hold the vine in place, or it may bear fruit. We will not, just now, consider the fruit, as we wish to get a strong vine, fit to bear fruit next year. The angle between the leaf and the stem is called the Axil; in the axil of the leaf, as the shoot grows, will be usually found two buds, as seen in figure 3. If the vine is in vigorous growth, one of these buds will push and form a side shoot. This shoot is generally called a Lateral, though other names have been given to it, but lateral is descriptive, and easily remembered. Now with the young vine planted this spring, we wish to get as strong a shoot as possible, and we do not wish any side-shoots, or laterals. If any of these push, as they will be likely to do, so soon as they show a second leaf, pinch that off, leaving but one leaf on the lateral. The bud in the axil of that leaf upon the lateral may push out a shoot after a while; if it does, when the shoot from that has two leaves, pinch out the upper one. When we say "pinch," we mean, use the thumb and finger-nail, which will be all the tender growth requires. The young vine, started from one bud, requires just this attention: The shoot should be kept tied up to a stake—for when young, it is easily broken by the wind, or by accident, and if it shows a tendency to push laterals, these should be pinched off to one leaf as above described. Now look at this vine. It has all that any vine has. Watch its growth, now, while young, for all its future growth will simply be a repetition of this. What have you in your vine? You have a root—look out for that, for it is a very important part of the vine; then you have a piece of old last year's wood, from which—if you have followed

our advice, you will let just one green stem or shoot grow. It is most convenient to call the stem of the vine, while green and growing, a Shoot, but when it has ceased to grow, and it is no longer green, but has ripened and become brown and hard, it is then a Cane. What is that shoot? It is made up of Nodes, marked by a swelling, and separated by a few inches of stem; at each Node is on one side a Leaf, and on the other side a Tendril. At the Axil of the leaf, you have two Buds, one of which grows and forms a Lateral, which you must pinch back to one leaf, and if another growth starts, pinch that back, and so on. Well, you have now, in this

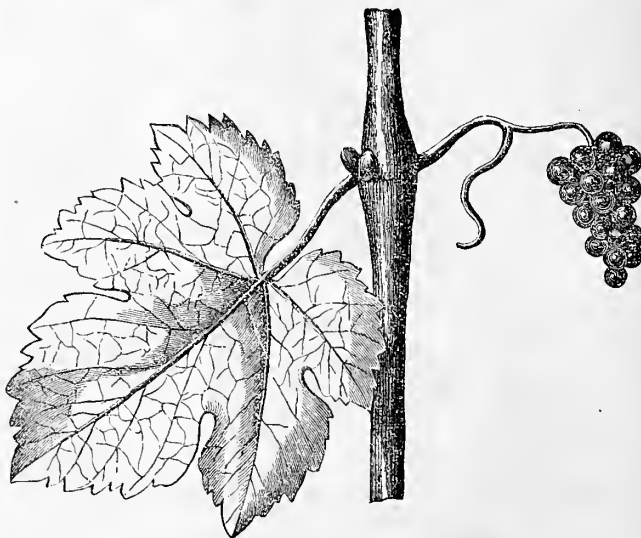


Fig. 3.—A NODE OF A VINE WITH ITS PARTS.

vine, all that any vine has, save that in older and stronger plants, and what you may have next year in your vine—instead of bare tendrils, you may have clusters of flowers, followed by clusters of fruit. Your old last year's stem, which you planted, is a cane. Your shoot, that grows from it, will ripen by and by into a cane. No matter how large the vine, no matter how it has been trained—or what is worse, not trained at all, these are all the parts with which you have to do. There is no mystery about them—all so perfectly simple that any intelligent youth can understand it. When this manner of the growth of the vine is once understood, all further treatment becomes perfectly plain.

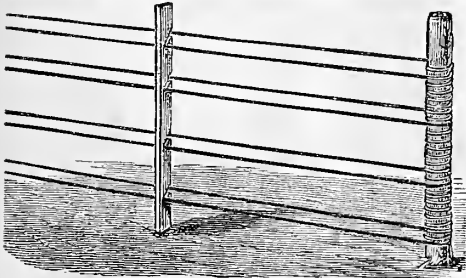
The Slender-leaved Lily.

A collection of the different species of Lily presents a wonderful variety not only in the color and form of the flowers, but in the character of the foliage, and in the size of the plant. From the rare Giant Lily (*Lilium giganteum*), which lifts its flowers 8 and 10 feet above the ground, down to the Slender-leaved Lily (*L. tenuifolium*), which contents itself with as many inches, there is a wide interval, which is in good part filled by other species of varying stature. There are other lilies of as low growth as this slender-leaved one, but none so delicate in all its parts. This has a bulb about the size of a walnut; its stems, from 8 to 15 inches high, bear on the lower part scattered leaves, which are so narrow that they appear more like those of a grass than a lily; the upper part of the stem is nearly leafless. The flowers are one to six, nodding, and of the size and shape shown in the engraving (on p. 181); they are of the deepest scarlet, without any spots, and have a shining surface: the pollen is of a brick-red color. In none of the accounts we have seen of this species, do we find any reference to its odor, which is quite as distinct as any others of its characters; it has not the oppressive sweetness of the Gold-banded Lily (*L. auratum*), but has a spring-like freshness most enjoyable. The drawing for the engraving was made from a forced specimen, which, when but one of its three flowers was open, delightfully perfumed a large room. This species is a native of Siberia, and though it has been in cultivation for over 50 years, is still a rare plant. It

is perfectly hardy, so far as cold is concerned, but it can not endure a moist soil, and unless a specially well-drained bed can be given it, the French cultivators advise to cultivate it altogether in pots. It is altogether too fine a plant to be scarce, and we hope our cultivators will take pains to multiply it.

A Wire Trellis for Peas.

The sticking of peas is a job which gardeners would gladly avoid, as it is often difficult to secure suitable brush, and the time occupied in collecting brush and setting it is no small item. A few years ago, we figured a pea-hurdle, such as is in use in England, but this is rather costly, and takes up too much room when not in use. Mr. Z. Mills, Jr., sends an account of his method of using wire to support his pea-vines; he has employed this for several years, and finds it greatly superior to brush. The peas are sown in double rows, six inches apart, care being observed to have the rows true. A post six inches in diameter, either round or half round, is set at each end of the row; it is placed three feet in the ground, and is as high as the vines require; the earth should be pounded firmly around the posts to prevent sagging. The wire used is galvanized iron, No. 13, which measures 150 feet to the



PORTION OF PEA-TRELLIS.

pound. When the peas are tall enough to need support, the wire is attached to a post, about six inches from the ground, carried to and passed around the post at the other end of the row, and back to the starting point; here it may be made fast and cut off, but Mr. M. prefers to take two or three turns around the post, and leave the coil hanging there until another stretch of wire is needed. When the vines grow 8 or 10 inches above the first wire, a second wire is stretched in the same manner as the first, and so on until the vines cease growing. Plasterer's laths, or other strips, or bean poles, are put every 15 feet in the row as stakes to support the wires, if they sag with the weight of the vines; the stakes have notches cut to receive the wires, or these may be tied with a cord or a short piece of wire. If the rows are over 300 feet long, another post should be set midway of the row to relieve those at the end of too great a weight. When the crop is gathered, the wire is removed and wound up on a reel, and the posts stored in a dry place, ready for another season. Mr. M. trains Lima and other pole-beans in the same manner, using for these a single wire, instead of passing it on both sides of the posts, as for peas. He is sure that he can get a larger crop from beans trained on wires than from poles, but at first some care is required to train the vines, and get them properly started.

THE POTATO-BEETLE.—The experience of last season has shown how easily the potato-beetle may be vanquished. Notwithstanding this pest, potatoes are plentiful in New York markets, at \$1.50 a barrel, and farmers seem to think that these prices are better than those for most of their products. The fight with the beetle, to be successful, must be swift, short, and sharp. No other remedy is so certain as Paris Green for the larvæ, and hand-picking for the first crop of the beetles. Hand-picking early in the season, prevents the deposition of thousands of eggs, and every egg destroyed, diminishes the late crop by hundreds or thousands. If farmers would only work for one year, and destroy the beetles as long as one is to be seen, sparing none of the late crop, there would be an end of them, practically, for ever afterwards. To spare the latest brood, is to save seed for the next season.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

BY FAITH ROCHESTER.

How to do a Washing.

Washing-machines are usually accompanied with printed directions for their use, but in more than half of the families throughout the country, no machine is used. The old-fashioned washboard is the main reliance. Perhaps washing does not come under the head of "skilled labor;" it is generally supposed that any one who has strong arms and back can do this work; but certainly something more than mere strength is required to do a washing well. There is a great difference in washings, as I can see in comparing my present task with ten years ago. I not only have more pieces in the wash now, but the majority of them are much harder to cleanse: this is because there are children in the family, who play out-doors in all kinds of weather. Knowing this, I am not likely to be deceived by any advertisements of machines, or soaps, or washing-fluids, which promise to do "the family washing" in an hour or two without any hard rubbing. It may all be true about some washings, but not about mine.

Many advise that the white clothes be always put in soak over-night before washing. I have not found enough help in this to pay for the trouble. I almost always use some kind of washing-fluid, or chemical soap, especially in summer, when most white clothes are used. In winter, a free use of flannels, which are easily washed, makes the work lighter. Clothes that are much soiled should not have hot water poured upon them, or be put into clear hot water, which "sets" the dirt. A hot soap-suds does not have the same effect. Yet I should prefer to wash stained articles in moderately warm suds, before putting them into hot suds. Many fruit stains are removed by pouring boiling water through the spots, but other stains cannot bear this treatment. Make, then, a good strong suds, as hot as the hand can bear. Add washing-fluid if you can, unless you have some kind of "electric" or "detergent" soap. Put in pieces to the amount of three or four or five shirts, according to the size of the tub, and amount of water. Of course, we wash first the finest, or least soiled articles. Let them soak in the strong suds a little, from five to fifteen or twenty minutes. Keep plenty of hot water in the boiler, and, to this end, fill it up whenever we take any out, keeping it somewhere near half full. If we use hard soap, it is best to shave up two-thirds of a bar, (or less if the washing is small), and dissolve it in a quart or more of hot water, upon the stove. Make the suds of this. With a good suds, and with a short soaking, the shirts, pillow-cases, fine shirts, and the under-garments of cleanly people, ought not to need much rubbing. After the first lot of pieces has been washed, wrung out, and dropped into the basket, put another lot in, adding more of the dissolved soap, or more hot water if needed. Some of the suds from the tub may be taken out first, in which to soak the especially soiled garments. When the suds in the tub becomes considerably dirty, prepare a clean suds, and in this begin with the white table-cloths, napkins, and dish-towels, if it is desired to keep these separate from articles of clothing, as some do. Many do not care about this, aiming to have every thing so clean when it has been washed, boiled, sun-dried, and ironed, that it may be put to almost any purpose. Each house-keeper must use her own judgment about what to put in first, or into the suds when it is clean. If white flannels are to be kept clear and white, they must be washed in clean suds, and rinsed in clean warm water; so never put them in at random among other clothes. As soon as you have taken out the last hot water needed for washing the white clothes, put more cold water in the boiler, and put into it the finest and whitest part of the white clothes. If you have used very strong suds in the washing, it is not necessary to put more soap into

the boiler, but most house-keepers do add soap, or soap and fluid. A thorough scalding is the main thing now. The water should be heated to boiling, and should boil from five to twenty minutes, according to the quantity of clothes in the boiler. Long boiling in suds makes clothes yellow. After the clothes are thoroughly scalded through the mass, I see no benefit in continued boiling. Stir them about, (or poke them down), with a clothes-stick. Set an empty tub near the stove, and take clothes from the boiler into this with the stick. When the tub is again on its bench, pour into it two or three pailfuls of cold water. Put another lot of clothes into the boiler, and proceed to "suds" the first lot. That is, rinse them well—rubbing wrists or children's drawers if not yet clean, and wring them. Take the others from the boiler, and suds them in the same tub. The sudsing water is then warm enough, and clean enough for washing the colored clothes. There is probably too much of it, and you can put some of it back into the boiler. If you have many colored clothes, you will need more than one suds for them. They should not lie in soak. White calico, with black figures, may be washed and boiled with the white clothes. Colored cotton or linen articles, may be rinsed in the water which has rinsed the white clothes, unless they are very dark colored or black, so as to show white lint, in which case they need clear water. They should be starched at once, and hung in the shade, if convenient.

Protection from Moths.

In May the clothes-moth begins to fly about our rooms. It is a small, light buff-colored "miller," dainty and beautiful on close inspection. Its highest mission seems to be to teach us to set our affections only upon incorruptible treasures which "moth and rust can not destroy." But it is necessary to keep a sharp lookout for the safety of our furs and flannels, and we must wage war upon it. In the first place we must carefully put away everything we can, upon which it will lay its eggs. If we pack away our furs and flannels early in May, before the moth has begun to lay its eggs, and leave them in boxes or bags so tight that the flying-moth can not squeeze in, no further precaution is necessary. Clean paper bags are recommended for this purpose—those used for flour and meal bags. They should be without holes or openings anywhere. These bags, when filled and closed firmly, may be put away on closet shelves or in loose boxes, without danger to their contents, so far as moths are concerned, without need of camphor or other strong odors to drive moths away. Furs are usually sold in boxes, in which they may be kept. Beat them well when you finally put them away for the season. If you delay putting them away until June, examine the furs well, and shake and beat them very thoroughly, in order that any moth-eggs that may possibly have been laid in them may be thoroughly removed or killed. Furs sealed up early in May need no camphor or tobacco or other "preventive." Muff and tippet boxes should be tied up securely in bags, or made safe by mending holes and pasting a strip of paper around the junction of the cover with the box below, so as to close all openings. Woolen garments must not hang in closets through the summer, in parts of the country where moths abound. They should be packed away in tight trunks or boxes, or sealed up in bags. Woolen blankets must be well shaken and carefully put away, unless they are in daily use. Early in June the larvæ of the moth begin their ravages, and now, unless you who dwell in places where clothes-moths are not found, look sharp, you will find some precious thing that you have forgotten—some good coat unused for a few weeks, or the woolen cover of a neglected piano, already more or less riddled by the voracious moths. It is their nature to eat until they have grown strong enough to retire from the eating business, and go into the chrysalis condition.

Some things can not well be packed away in tight boxes and bags, and among these it is well to scatter small lumps of camphor or clippings of Russia leather. Some use tobacco, though I think

camphor is usually preferred. It is said that powdered black pepper, scattered under the edge of carpets, will preserve them from attacks. Dr. Harris says that "the cloth lining of carriages can be secured forever from their ravages by being washed or sponged on both sides by a solution of Corrosive Sublimite in alcohol, made just strong enough to leave a white stain on a black feather."—I have lived most of my life where none of these precautions were necessary, but I shall never forget the shame I felt, during the first year of my house-keeping, when I discovered the wide-spread damage done in my house, before I had even thought of such a thing as moths.

Care of Winter Bed-clothes in Summer.

In a sister's letter I find some good suggestions about the proper keeping of unused bedding. Before she came West she had plenty of good roomy closets, but now she lives in a house with only one small clothes-room. So she manufactures closet-room out of dry goods boxes. A medium sized box, turned up on one side, with cleats nailed on the ends inside the box, for two shelves, affords room to pile away her bed quilts nicely folded; and then she covers them with newspapers, tucked under all across the front, so as to exclude dust. From the top of the box she hangs a curtain, and covers the whole with a cloth or with paper, using the flat top for a table to lay piles of papers and magazines which she wishes to preserve. I have previously described a table made of a dry goods box, by turning it on its side and elevating it on legs. Such tables are excellent places for packing comforters and quilts. The bed-clothes should be well aired on the clothes-line in the sunshine, before putting them away. If blankets are packed away in these box tables, they must be especially guarded from moths, as previously directed.

Bean Soup.

A friend recommends this as the best: Soak the beans over night. Boil three hours, or until very soft. Strain them through a colander and, after placing the soup again over the fire (to heat, but not to boil more than a minute), season for one pint of beans as follows: One teaspoonful each of sugar and salt, half teaspoonful pepper, teacupful of milk, one tablespoonful of butter, and one beaten egg.

Potted Ham.

In warm weather it is difficult to keep ham that has been cut. The following plan is safe and good. Cut all that will make good slices, and fry as for the table. Lay the pieces close and even in a stone jar, packing them snugly and pressing them down. Pour all the hot fat over them, to fill the spaces and exclude air. Lay a plate over the top with a stone upon it. Keep in a cool, dry place, and you will find it nice and convenient all through warm weather. When wanted for the table, lay slices in the frying-pan, and only heat them through without more cooking. Be careful to keep the top of the jar covered carefully, so that flies may never gain an entrance.

How to Bake a Ham.

A good way to cook a ham, is to bake it. Soak about twelve hours. Wash very clean, trimming away any rusty parts. Wipe dry, and cover the part not protected with skin, with a paste, or dough made of flour and hot water. Lay in a dripping-pan, with the paste-covered side upwards, with enough water to keep it from burning. Bake until a fork pierces it easily, allowing about twenty-five minutes to each pound of the ham. Baste occasionally with the drippings, to prevent the crust of paste from cracking off. When done, peel off this crust and remove the skin of the ham. It may be served as it is, or it may be glazed.

To Glaze a Ham.

Brush the ham over with beaten egg. To a cup of finely powdered cracker, allow enough rich milk or cream to make into a thick paste, add a little salt, and work in a teaspoonful of softened butter. Spread this evenly over the ham, a quarter of an inch thick, and set it in a moderate oven to brown.

Rhubarb Pie.

Some very early Rhubarb, with tender red stems, does not need scraping or skinning, or anything but

simply washing; but usually the first thing to be done, is to strip the stems of the tough skins. Cut into half inch slices, and lay them evenly on the undercrust. Scatter over this a teacupful of sugar and a tablespoonful of flour. Wet the edge of the undercrust all around, and press the edge of the uppercrust neatly to it. Dip the fingers in flour and pass around the cut edge, to make it close well, so that the juice will not be lost. Care is needed that it does not bake too fast (the most common cause of running over), yet it does not want a slow oven.

Gardening for a House-keeper.

"Mrs. J. R. S." goes to the country in May, and stays until October. They keep a man to care for the horse and cow and the vegetable garden. "Mr. S." comes from the city at evening, and goes back

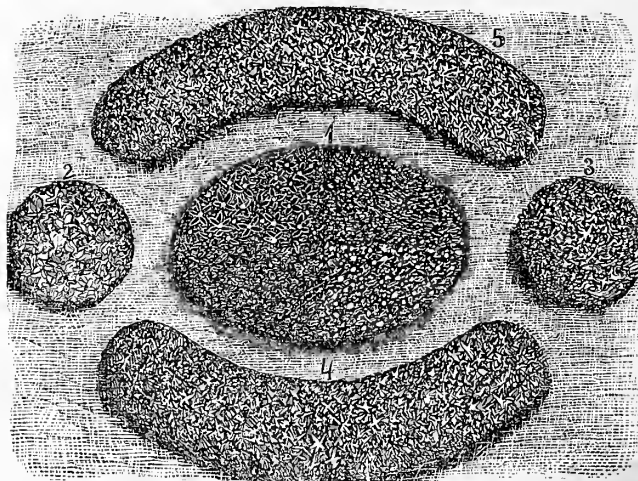


Fig. 1.—DESIGN FOR FLOWER-BEDS.

in the morning; and whatever of flower gardening is done, must be done by the Madame herself, with such help as the man can afford. The cottage has a fair-sized front-yard, with grass in very good condition; there are a few shrubs, but they all flower early, and are soon done with, and she wishes to break up the uniform green, and put a spot of bright color on the lawn, but she would do this at a very little expense, and with the least possible labor. No doubt this is the case with many other house-keepers—they would like to know how they can do a bit of ornamental gardening inexpensively, both as to outlay of money and labor. For such purposes, they must rely upon Annuals, and to produce the best effect, these should be in masses. The accompanying diagram, fig. 1, is of some beds made a few summers ago by a neighbor of ours, which were very successful, indeed more effective than the gardens of some of her neighbors, where a gardener was kept, and a vastly greater expense incurred. Here we have an oval bed, with a curved bed at each side, and a small circular bed at each end; the simple outlines are in much better taste than the stars, hearts, and such figures as are often attempted. It is not easy to make an oval by the eye, but very easy with two sticks and a string, as shown in figure 2. At *a* and *b* are two stout sticks, put firmly in the ground. The dotted line is a cord, or strong twine, made fast to another stick at *c*, which is to serve as a marker. By moving the stick *c* in either direction, keeping the cord tight all the while, a regular oval may be traced, which will be narrower or broader, as the cord is lengthened or shortened. On the bare ground, the outline may be scratched by the stick *c*; but as the bed is to be made in the grass, a number of sticks, one say for each foot or so, will be needed—bits of lath, or any twigs, will answer; these sticks are to be used to mark the outline, and one is to be stuck into the ground every foot or so at the places indicated, by moving the stick *c*. When the outline is satisfactory, the turf should be carefully

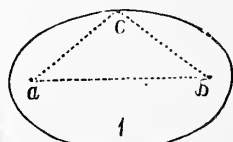


Fig. 2.—OVAL.

cut with a sharp spade, following the sticks as a guide, and taken up and removed. It will then be easy to lay out the two curved and two circular beds, which should have the turf removed from them in the same manner. In the case referred to, the oval was four and a half feet wide, the two circles four feet across, and the curved beds three feet wide; the width of grass left between the different beds was two and a half feet, to allow the mowing-machine to be readily used. If the turf has been neatly taken off, probably no soil need be added; some well-rotted manure should be given, and the beds well forked over, and the soil made fine and mellow with the fork and rake. Now for filling the beds. The center one was filled with the *Petunia*, the "Countess of Ellsmere," which is one of the best bedders; a rather small flower, but of good substance, of a deep rose-color, with a white throat, and very lively. This may be had of most seedsmen, but, of course, any other will do, if preferred. For the curved beds, two colors of *Phlox Drummondii*, the catalogues allow quite a selection. For the circles, both may be filled with *Dwarf Convolvulus*, the bright blue or purple variety. These selections can be varied indefinitely, but those named are of annuals that are really effective, and, what is quite important, last long in bloom. They may be sown in the beds, and thinned afterwards, but it would be better to sow, at least the *Petunia* and *Phloxes*, in boxes, the seeds are so fine; and when the plants are large enough, transplant to six or eight inches apart each way, all over the beds. If a bolder effect is desired, a Castor-Oil plant may occupy the

center of the oval, surrounded by the Striped Japanese Maize, the four outer beds being planted as before suggested. Either of these arrangements will be very brilliant and satisfactory, at an outlay of only 50 cents for seeds.

Women's and Children's Shoes.

"R. K.," Hartford, Conn., wishes a recipe to make a dressing to use upon the shoes of the women and children; one that "will polish, will not crack, and will be good for the leather." There are various preparations sold, but R. K. is tired of buying them, as their chief expense is for the bottles, which when empty accumulate, and are not useful for any other purpose. The only article of the kind with which we have had much experience, is the old-fashioned "Sponge-Blackening," which has been in use for a half century or more. It is simply a Shellac varnish, and is probably not especially "good for the leather"—a matter of not much importance for the shoes of women and children, the uppers of which, under any circumstances, outlast the usually thin soles. To make this, put half a pound of gum shellac in a wide-mouthed bottle, or fruit jar, and cover it with strong alcohol; loosely cork, and set this in a sauce-pan of cold water, placing under it a small piece of board, a couple of sticks, or whatever will keep the bottle from direct contact with the bottom of the sauce-pan. Set the pan on the stove, and allow it to heat up gradually, and keep the water at the simmering point, stirring from time to time with a stick, until the shellac is dissolved, which it should be in half an hour or less. Recollect that the vapor of alcohol is very inflammable, and it must be kept from contact with the fire. When the shellac is thoroughly dissolved, remove the bottle from the sauce-pan, and add one ounce of lamp-black, stirring thoroughly, until all lumps are removed. If too thick, as it is likely to be, add more alcohol to make it thin enough to apply readily with a brush, or by means of a sponge attached to a wire. Keep well stopped, and if it becomes thick by the evaporation of the alcohol, add more. This applied, as a varnish, to leather, rubbers, etc., dries at once,

and leaves a bright gloss. It can only injure leather mechanically, several coats will make it stiff, which may be avoided by occasionally oiling the leather.

A DRESSING FOR PATENT LEATHER.—When patent leather boots or shoes lose their original lustre, they may be revived by a very simple dressing. Sugar one pound; Gum Arabic, in powder, one ounce; Ivory-Black, one pound. Add a pint of water, and boil together, stirring, until the Gum and Sugar are well dissolved. If too thick to apply smoothly, add more water. Let stand for a few hours for the coarser portions of the ivory-black to settle, then pour off and bottle. This is to be applied to the patent leather with a soft camel's-hair, or badger-hair brush. When a new application is to be made, the former coat, if too thick and stiff, may be removed by washing it off with a damp cloth. This renews the lustre of patent leather perfectly, and was given us by a gentleman from Europe, who paid his French valet a round-price for the secret.

Household Notes and Queries.

A GOOD PREPARATION OF VEAL.—This being the "veal season," the following is an excellent mode of preparing it to be eaten cold, and for keeping it on hand for several days, ready for immediate use: Take say 3½ lbs.—the thick part of the leg is preferable, with the tough tendinous parts removed—chop it fine without cooking; mix well with it 4 soda crackers rolled fine, 3 well-beaten eggs, 1 tablespoonful of salt, 1 teaspoonful of pepper, ½ nutmeg, 2 tablespoonfuls of cream, or a small piece of butter. Make it into a loaf, and bake in a dripping-pan without water, with quick heat at first, to close the outside and retain the juices, and continue the baking about 1½ to 1¾ hour. Serve out in thin slices. An excellent lunch in traveling.

ANOTHER WAY TO COOK VEAL.—In England everybody goes to the races, and great preparations are made for the lunch on those occasions. Veal prepared in this manner is a favorite at the race lunch, but will be found useful at other times. Butter a good sized bowl, and line it with thin slices of hard-boiled eggs. Have veal and ham both in very thin slices; place in the bowl a layer of veal, with pepper and salt, then a layer of ham, omitting the salt; then a layer of veal, and so on alternating with veal and ham until the bowl is filled. Make a paste of flour and water, as stiff as it can be rolled out; cover the contents of the bowl with the paste, and over this tie a doubled cotton cloth. Put the bowl into a saucepan, or other vessel, with water just up to the rim of the bowl, and boil three hours; then take it from the fire, remove the cloth and paste, and let it stand until the next day, when it may be turned out and served in very thin slices.

GASOLINE.—"C. T. M.," Bolivar Co., Miss., asks: "Is Gasoline any more dangerous to use for burning than coal-oil, and what is its composition?"—Without knowing what our correspondent means by "coal-oil," we can answer that Gasoline is eminently—fearfully dangerous, and should not be used in any lamp whatever. To answer his question as to composition in general terms, we may say that Petroleum, as it comes from the wells, is a mixture of several distinct compounds of carbon and hydrogen. The products from different localities vary greatly, but they are all mixtures of hydro-carbons, which are distinguished especially by a great difference in their boiling points. If petroleum be placed in a still, and heat gradually applied, first *Rhigolene*, will pass off. This has the lowest boiling point of any liquid, as it boils at 65° Fah. Then when the heat is raised to 120° Fah. Gasoline will pass off. At 180° *Naphtha* will be distilled; of this there are three kinds; one boiling at 180°, another at 220°, and another at 300°. When the heat is raised to 350°, the liquid which passes off is known as *Kerosene*, and there are others that boil at higher temperatures than this. This is the only petroleum product that can be safely used, and Gasoline or Naphtha alone, or, as they unfortunately sometimes are, mixed with Kerosene, should be avoided. While there are contrivances for burning the vapor of Gasoline mingled

with air, as a substitute for gas, and for aught we know, some of these under proper management may be safe, there is no way, no lamp, in which the liquid *Gasoline*, or either of the *Naphthas* can be safely burned. Who ever does this, assumes a risk he has no right to take, and exposes others to dangers fearful to contemplate. Let them all alone!

YEAST.—"Mrs. C.," of Hawley, Minn., finding the preparation of the yeast, in providing bread for a large family, to be no little labor, has simplified the matter as follows: "When the potatoes are boiled for dinner, I pour the water in which they have been cooked into a pitcher, setting it aside to cool. By the time dinner is over, it is about the proper heat. I then add a tablespoonful each of sugar, salt, and flour, mix together thoroughly, and pour this into the yeast-jar, which, of course, has left in it some of the old yeast. In this way I have always fresh, good yeast on hand, with comparatively no trouble."—This is not very definite as to quantities—of course it refers to water from peeled potatoes; but the plan of adding fresh materials to the yeast-jar is a good one.

COTTAGE PUDDING.—"H. M. J." If one wishes to prepare a dessert hurriedly, or when an unexpected visitor comes on a day when the dinner is somewhat meagre, this pudding answers an excellent purpose, as it is easily and quickly made, and "very filling for the price." The materials required are: Flour, three cupfuls, or sufficient to make the batter; Butter, one tablespoonful; Sugar, one cupful; Eggs, two; Milk, one cupful; Soda, half a teaspoonful; Cream of Tartar and Salt, of each, one teaspoonful. Mix the Cream of Tartar with the Flour, beat the Whites of the Eggs together, then work in the Milk, Soda, and Salt, adding gradually, the Flour and Whites of the eggs. There should be flour enough to make a fairly stiff batter. Butter a mould or dish, and bake. It may be turned out, or served from the dish. To be eaten with any liquid sauce.

LEMON PIE.—The grated rind and juice of one Lemon, one teaspoonful each of White Sugar and boiling water, one tablespoonful each of Butter and Corn-starch, one Egg. Begin by creaming together the butter and sugar. Mix the corn-starch with a little cold water, and stir this into the boiling water. Pour this hot starch mixture over the sugar and butter, stirring together. While it is cooling, heat the egg and prepare the lemon. Stir all together, and bake with one crust.

CARPET MOTHS.—"W. W. B." We have published it once before; but it is seasonable, and we will give it again. These moths are mostly under the edges of the carpet, but take refuge in the cracks of the floor and under the base-board. Fold a sheet or other cloth to a handy size, wet it, and lay it upon the carpet; then have several flat-irons quite hot, and iron the cloth. This will drive the steam through the carpet and into all the cracks. By persevering with this, at intervals of a few days, to catch those that have hatched after the application, you will soon overcome them. Repetition is important in all battles with insects, as eggs often escape the treatment that kills the insects.

RECIPES WANTED.

A house-keeping friend asks for a recipe for making *SCRAPPLE*, said to be a popular breakfast dish in Philadelphia. We think it is a modified kind of head-cheese—will some one tell how to make it?

APPLE DUMPLINGS, STEAMED.—"Mrs. H.," of Niagara Co., N. Y., fails to make Steamed Apple Dumplings to exactly suit the taste of "Mr. H." Will some of her house-keeping sisters help her?

RYE FLOUR.—"Mrs. A." of Erie Co., N. Y., would like to know the best method of making Rye-bread, and for using rye flour generally. They can raise excellent rye, but have to buy all their wheat.

"SALT-RAISING."—"A Subscriber," very sensibly prefers "yeast-bread," but would like to know how to make other kinds to use in an emergency.

"THE QUEEN OF PUDDINGS."—"Mrs. D.," of Brenham, Texas, saw a recipe for this, several years ago. Can any one give us the recipe to publish it for the benefit of her and others?

BOYS & GIRLS' COLUMNS.

Aunt Sue's Chats.

A CARD-BASKET.—"K. B. W."—I know of no better pattern for "a card-basket of perforated card-board," than

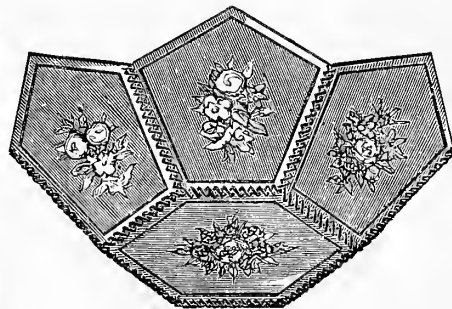


Fig. 1.—PATTERN FOR CARD-BASKET.

that with a hexagonal base and six five-sided pieces around the sides. Figure 1 shows you half of the sides sewed upon the base. Let each side of your hexagon be exactly one inch and three-quarters wide. Cut your side-pieces of the shape of figure 2. (You will see the dimensions marked upon it.) Bind the pieces around, with narrow lute-string ribbon. You can either work some little design on each piece with silk or worsted, or you can stick a little picture upon each. Overhand the pieces together (as seen in fig. 1). Be careful to sew to the

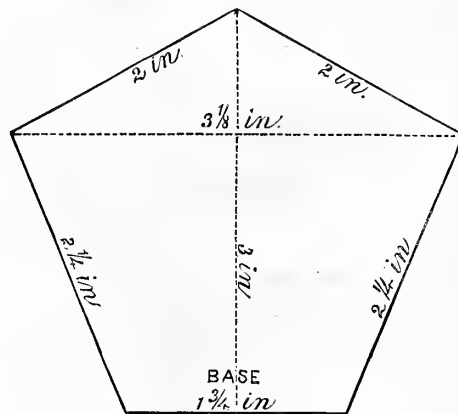


Fig. 2.—ONE SIDE OF BASKET.

hexagonal base the side of the five-sided piece which measures 1¾ inches. A little bow of lute-string at the top (inside) of each side seam, will add to the effect.

RED JAPAN VARNISH.—"J. D. F."—The simplest way to make this, is to procure a stick of the best red sealing-wax, break it into small pieces, and drop it into a wide-mouthed bottle; then cover the sealing-wax with strong alcohol; cork the bottle, and set in a warm place. When thoroughly dissolved, it will be fit for use. You can dip your little twigs in it "to make them look like coral." The varnish soon dries, so you can give several coats, if needed, without much trouble. Poor sealing-wax will make an unsatisfactory varnish. Buy of a stationer, who knows what a good article is.

POLISHING SHIRT-BOSOMS.—SELMA wishes me to tell her "how to give a glossy appearance to shirt-fronts and collars, such as they have when new."—I can tell you, Selma, how to make the starch, but a great deal depends upon the ironing. Make a quart of starch the usual way, but see that it is very smooth and very thoroughly boiled. While hot, stir into it a piece of spermaceti, about as large as a hickory nut; then add a tablespoonful of gum-water, and stir all well together. You can always keep the gum-water prepared. The proportions are, two ounces of gum Arabic to one pint of water; but you had better make only half the quantity if you use it but once a week, as it spoils, especially in warm weather. But after making the best possible starch, you can not make the linen look "like new" without a "polishing-iron." These are sold at the furnishing stores, and are like a common flat-iron, but with rounded edges, and a highly polished steel face. It is hard rubbing with an iron of this kind that gives the new articles and those from the city laundries their peculiar gloss.

CRACKERS.—BELTINE had no success with her crackers; who will tell her how to make them?

I. T. E. asks me for a "description of printing done in old times, materials used," etc.—Some say that the Chinese printed from engraved blocks of wood, fifty years before the Christian era. Then we hear of it in Venice in the fourteenth century, where they fastened a page of manuscript on to the face of a block of wood, and engraved

the letters as written. In 1450 metal blocks were substituted for wooden ones. Peter Scheffer (son-in-law of John Faust) introduced movable metal type. The Mentz Bible is the first important specimen of metal-type printing, supposed to be published between 1450 and 1455. The Italic type was the invention of Aldus Manutius, the celebrated printer at Venice, about 1500, and dedicated by him to the States of Italy, from which it took its name.

I. T. E. sends a puzzle for the little ones to draw on

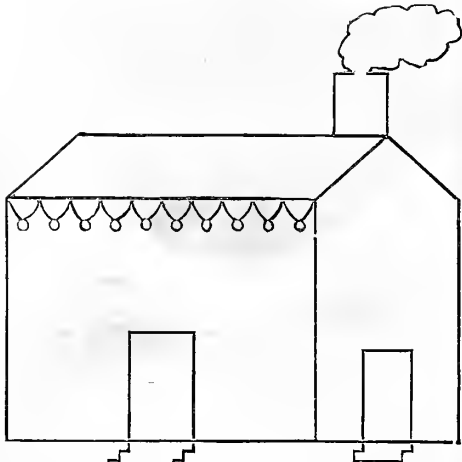


Fig. 3.—PUZZLE DRAWING.

their slates, (see fig. 3). They are to draw it without crossing a line, and without removing the pencil.

THE CAT AND THE RATS.—It is quite a long time since the cat and rat problem had a run, so we will start it on its rounds again. D. F. B. sends it to us this time. If 3 cats kill 3 rats in 3 minutes, how many cats will it take to kill 100 rats in 100 minutes?—I shall be happy to receive solutions to this.

Thanks, for letters, puzzles, etc., to Lee Sharp, H. S. Bean, H. Ashland, Jacob H., F. D. C., Benny, Lizzie D., Martin M. S., Cyrene G., "Rev." Monticello. (I am always pleased when the seniors join in the fun), and to Theo. F. S.

The Doctor's Correspondence.

I have been expecting it, and it has come at last—indeed, several have come—requests that I would tell the youngsters

"All About the Telephone."

Those who request another to tell them "all about" anything, have little idea how much they ask. Very few people in this world know "all about" anything. I say that I expected the request, because so many accounts of the wonderful doings with the Telephone, have been given in the papers all over the country, that I was very sure that some of my youngsters would wish to know about it. So before the first of the requests came, I examined the Telephone very carefully, intending to say something about it, even if you did not ask, for it is really a wonderful thing, and a great wonder about it is, that the accounts, for once, have generally been very true. In the first place we must ask

"What is a Telephone?"

for there are several of them. Its name gives a hint as to its use. You know that a *Telescope* allows one to see things that are far off; a *Telegraph* allows one to write at a great distance, and you are prepared, from the resemblance of the word *Telephone*, to know that it has something to do with distances. The name means to sound a-far off, but with the present instruments it is not merely a sound, but it carries voices and words, and by it persons can converse when miles apart. When I first saw the Telephone, I went to the "Tribune" Building, which is just across the Park from the office of the *American Agriculturist*, and there found Mr.



THE STREET TELEPHONE.

Applebaugh, whom I had known in telegraph matters, in charge of the Telephone. Although he has to do with *Tele*, or "far off" things, he is by no means a *distant* person himself, but showed me the *Tele-phone* inside and out. A wire extended from his office up to the building of the American Institute, where the Fair was being held, and distant three or four miles, at least. He took up a sort of wooden pepper-box, and introduced me to a lady at the Fair. He gave me another pepper-box to hold to my ear, and I heard very distinctly that the lady was "very glad to see me," though how she could

"see" through three miles of brick buildings, I could not understand. We talked a while, every word being perfectly distinct, and after that Mr. A. asked her to sing, when "Red, White, and Blue," was very neatly done; then another lady having joined the one at the Fair building, I had a pleasing duet. These are some of the things the Telephone will do, and you want to know

"How Does It Do It?"

The Telephone is no new thing, for there were attempts of the kind years and years ago, but it is only of late that it has been a success, because Prof. Bell, and others, have hit upon the present way of doing it. To understand the Telephone now in use, you must know a little about electricity and the magnet, and something about the laws of sound. Let us leave the electricity for the present, and see how much you know about sound.

Why Do We Hear a Sound or Noise?

Something must set the air in motion before we can hear anything. If you throw a pebble into still water, you see the little waves form a circle, which spreads, and spreads, so that after a while they strike the shore or spread so that you can not see these rings of waves, they become so small. When you clap your hands, you make similar waves in the air to those the stone makes in the water. They spread in all directions until they strike some one's ear; the waves of the air hit the "ear drum," which is like a drum-head. A stretched membrane, or kind of skin, that takes on the motion from the waves of air, sets some little bones—very curious they are, too—to shaking, and finally the disturbance in the air, caused by your "spatting" your hands together, gets through the ear-drum, the little bones and other parts of the ear to the brain of another person, and he *hears* the noise. Sounds of all kinds, from the least whisper, and the softest musical note, to the thunder, all come to our brain—are heard, through a disturbance in the air, which is set in motion in one way or another. Now the Telephone is a contrivance for disturbing the air in a particular manner, so that it will repeat the sounds of music, or of a voice, at a great distance—50, or 100, or more miles. The contrivance by which this is done, I must tell you of at another time. The Telephone repeats a sound at a distance, by the vibration of—what do you suppose?—a plate of iron! The arrangements of the very simple parts for doing this, I will try to show another month. That vibrations caused by the voice may be carried a long distance, is shown by the little toy now called the "Street Telephone," but which, a few years ago, was sold as "The Lovers' Telegraph." This is easily made of two tin cylinders; mustard, or spice boxes, with the bottom knocked off—placing the box on the stove, until the solder which holds the bottom is melted. Over one end of each cylinder is tied a piece of wetted parchment (no doubt bladder would answer as well); this, when dry, will be as tight as a drum. Now take a small cord, or twine, 50 or more feet long; make a small hole in the center of each parchment head, pass one end of the cord through, and make a knot on the other side—or inside—to hold it; the engraving shows the thing, but not the whole length of the cord. To use this, two persons, each taking one of the tin drums, and *stretch the string a little tight*. One talks into the open end of the tin, while the other holds his to his ear. The voice sets the parchment to vibrating; these motions are carried along the string, and set the other parchment into the same kind of motion, and this allows the ear of the other to hear what was said quite plainly. This is but a toy, but it shows one way in which words may be carried to a distance.

Aunt Sue's Puzzle-Box.

TRANSPOSITIONS.

(Fill the blanks in each sentence with the same word transposed.)

1. If he doesn't take — he will lose the —.
2. The route runs on a — with the —.
3. He looked — when he took the —.
4. The — had to go through several —.
5. He took good care to — his beautiful —.

NTP.

DIAMOND PUZZLE.

1. Part of a cabbage. 2. An animal. 3. A kind of lily.
4. A certain kind of transportation. 5. A city in the United States. 6. Hibernating animals. 7. A surgical instrument. 8. A mineral. 9. Part of a bean.

DENVER, C. T.

RHOMBUS PUZZLE.

Across.

1. What the baby does when the mosquitoes trouble him at night. * * * *
2. What day-laborers always welcome. * * * *
3. What Noah did when he first put his foot on the ark. * * * *
4. Exactly the same as number 3. * * * *

Downwards.

1. Without this we never should get wet.
2. Often a bad position for a man's hat.
3. A despicable individual.
4. A certain kind of people or things.
5. A conjunction.
6. A verb.
7. The first and last of every deed.

BIBLICAL ENIGMA.

I am composed of 28 letters:
My 5, 24, 1, 13, 8, 12, was a city celebrated for its commerce and literature.
My 9, 4, 16, 1, 27, 23, a beautiful, fertile plain of Palestine.
My 14, 17, 2, 15, 26, 1, is the refined spirit or quintessence.
My 17, 11, 3, 2, 7, 10, a band of soldiers in the Roman army.
My 22, 18, 21, 6, 28, 9, is a European city.
My 25, 16, 17, 19, 10, 20, was an ancient measure of money.
My whole is part of a verse of Proverbs. ISOLA.

NUMERICAL ENIGMAS.

1. I am composed of 45 letters:
My 21, 35, 43, 1, 12, 26, 45, 31, is a celebrated philosopher.
My 41, 17, 37, 7, 9, 24, is the name of a prophet.
My 19, 28, 44, 5, 23, a city in France.
My 22, 14, 8, 40, 6, 4, 25, 42, is something we all have of which no one can rob us.
My 16, 13, 2, 33, 36, 20, is a bird.
My 32, 3, 38, 34, 45, 39, is a constellation.
My 15, 10, 27, 30, 6, 14, 9, is a country of old Europe.
My 25, 11, 34, 18, 29, 9, is a city of Greece.
My whole is all too true. FANNY BOND.

2. I am composed of 10 letters:

- My 1, 2, 7, is a pronoun.
- My 6, 10, 3, 9, is a fruit.
- My 9, 8, 4, 10, is a tool.
- My 5, 2, 7, 10, 6, is an animal.
- My whole is a well-known author.

KATE J. CURTISS.

3. I am composed of 13 letters:

- My 4, 2, 9, 6, 10, is a fastening.
- My 4, 2, 9, 10, 5, is a machine.
- My 4, 2, 1, 10, is a stick of wood.
- My 3, 8, 7, 9, is a bar for fastening.
- My whole is an article of every day use. J. & C.

4. I am composed of 17 letters:

- My 8, 6, 7, is a girl's nickname.
- My 5, 2, 9, 9, 13, 14, is a plant.
- My 1, 3, 4, is an insect.
- My 11, 14, 1, 13, is ardor.
- My 12, 16, 3, 14, is a girle.
- My 15, 7, 1, 10, 17, are much discussed by young ladies at boarding-school.
- My whole is something to which we all look forward with interest and pleasure. SYDNORA.

HOOR-GLASS PUZZLE.

* * * * *
* * * * *
* * * * *
* * * * *
* * * * *

1. An enemy. 2. Unmerciful. 3. A girl's name. 4. A consonant. 5. To prosecute. 6. Resentful. 7. To search thoroughly. The central letters, read downwards, name what we should all avoid. TRY AGAIN.

ALPHABETICAL ARITHMETIC.

G A L) G R I T M L T H (L S A I G L

G A L

L R T M

L G I A

O L R L

O S A I

L S R T

L S O G

G A H

G A L

T CHAS. A. SPROAT.

CROSS WORDS.

1. My first is in hawthorne but not in pine,
My next is in brandy but not in wine,
My third is in teach but not in learn,
My fourth is in scald but not in burn,
My fifth is in voice but not in tone,
My whole is what all men like to own. ROBT. F. Q.
2. My first is in pudding but not in pie,
My next is in nearly but not in night,
My third is in distance but not in length,
My fourth is in power but not in strength,
My fifth is in pond but not in lake,
My sixth is in mend but not in break,
My seventh is in lend but not in borrow,
My eighth is in hope but not in sorrow,
My ninth is in months but not in years,
My tenth is in cries but not in tears,
My eleventh is in yells but not in flight,
My whole the career of man will surely blight. P. A. McI.

HIDDEN RIVERS.

1. He went to a donation party.
2. Combine useful with ornamental acquirements.
3. An Indian prisoner made his escape, deer-hunting.
4. Never indulge in wrath or anger.
5. Every unripe plum is sour, I think.
6. A young declaimer absurdly began gesticulating before speaking.
7. A painter said he could color a dog green if he so desired.
8. Give me some more lettuce and another cucumber, Landlord.
9. That young miss is sipping tea out of china a hundred years old.
10. A divorce lawyer said to a clergyman, "What you connect, I cut asunder." X. Y. Z.

SYNCOPIATIONS.

- (Subtract a letter. Example: Syncope a heap, and leave something of which most boys are fond. Pile, pie.)
1. Syncope a minute particle and leave something necessary to vegetation.
 2. Syncope a month and leave part of a circle.
 3. Syncope an agricultural implement and leave a plant.
 4. Syncope a country and leave part of the face.
 5. Syncope a tract of cultivated land and leave part of the body.
 6. Syncope a vehicle and leave a plant.
 7. Syncope part of a wagon and leave part of the foot. JOHN W. WHEATLY.

SQUARE WORD.

1. A Hindoo book. 2. A title of nobility. 3. A color. 4. Turkish coins.

DOUBLE CROSS-WORD.

My first is in hornet but not in fly,
My next is in near but not in high,
My third is in never but not in now,
My fourth is in manger but not in mow,
My fifth is in condor but not in kite,
My sixth is in nearly but not in quite,
And now two States will come to view
If you but place the letters true.

E. W.

DOUBLE ACROSTIC.

The initials form a city in Pennsylvania and the finals a city in Massachusetts. 1. A small cannon. 2. A city in New York. 3. A farewell. 4. A city in Ohio. 5. A destroyer. 6. None. 7. A city in Prussia.

BILLY BUTTON.

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

- ARTHYMOREMS.—1. Candle. 2. Mortal. 3. Island. 4. Simple. 5. Attend. 6. Point. 7. Extensive. 8. Cooks. 9. Civil. 10. Hoop.

ALPHABETICAL ARITHMETIC.

Key: "Vanderbilt."

DROP-LETTER PUZZLE.

Counterpoise.

CROSS WORD.—Saturday.

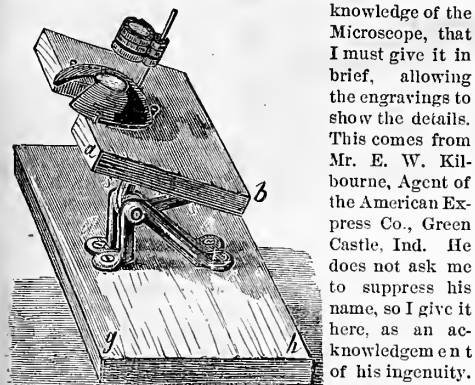
Pr.—Pride is an extravagant opinion of your own worthiness: vanity is an inordinate desire that others should share that opinion.

Thanks for letters, puzzles, etc., to Charles B. W.

Send communications intended for Aunt Sue, to Box 111, P. O., Brooklyn, N. Y., and not to 245 Broadway.

The Young Microscopist's Club.

I supposed that the contrivances for mounting the American Agriculturist Microscope, had all been given. I recollect that I said, in one of the former articles, that the chief thing was to get the lenses, and that when one had these, he could mount them in ways to suit his needs. Several methods of mounting the Microscope (my own and others) have been given, and now here comes one that shows so much ingenuity, and also



knowledge of the Microscope, that I must give it in brief, allowing the engravings to show the details. This comes from Mr. E. W. Kilbourne, Agent of the American Express Co., Green Castle, Ind. He does not ask me to suppress his name, so I give it here, as an acknowledgment of his ingenuity. He writes a very full account, which I give in my own way, and makes very plain drawings, which are here engraved. Mr. K.'s object is to so mount the Microscope, that it can be readily used for both opaque and transparent objects, and also to allow it to be inclined to any desired angle, which is often

A Great Convenience.

The first thing required in Mr. K.'s mounting, is a heavy foot of hard-wood; this may be one inch thick, and six inches square. This is shown in *g, h*, figure 1. The Microscope is mounted upon a base, 3 x 4 inches, and of 1/4 to 1/2 inch in thickness; this has an opening 1 1/2 inch square cut in it, over which the Microscope sets; this base is seen more distinctly in figure 2, where it appears as if looked down upon. The Microscope is held in place over the opening by means of three large-headed carpet tacks. One of these is placed at the dot marked *l*, (fig. 2), and the other two at *k* and *p*; the tacks are not to be 'driven home,' but left so far above the surface of the wood, that the hard rubber base of the Microscope will pass between them with a slight push. The important point is to so attach this base, holding the Microscope to the heavy wooden foot, that it may be inclined at will; this Mr. K. ingeniously does by

The Use of Curtain Fixtures.

At figure 3 is shown a common bronze casting, such as is used to hold up the end of the roller to a window shade or curtain. Two of these castings are attached to the heavy foot (*g, h*) by means of screws, and just far

enough apart to allow a third to be placed between them.

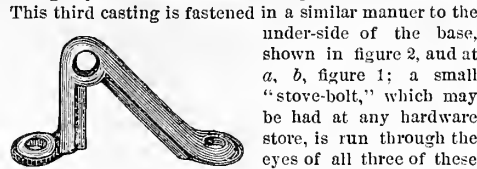


Fig. 3.—CASTING.

sition of the parts, as seen from the front: *c, d* is the foot; *a, b*, the base; *g, h, i*, the three curtain fixtures, through the eyes of which is passed the stove bolt, *a, p* (to be had at the stores for 2 to 4 cents). In case, as will usually happen, the bolt is too long, a common spool (*y*), or a part of one, may be used as a "washer," between the castings and the nut, *o*. This contrivance may be varied by using thick leather washers between the three castings, and between one of these and the head of the bolt, and between the other and the nut. The object of the arrangement is to allow the base, to which the Microscope is fastened, to be placed at and held at any angle. This accomplished, Mr. K.'s next point was to so

Arrange a Mirror

that he could readily throw light upon any object under examination. This he does in a very simple manner. Beneath the base to which the Microscope is attached, as already described, is fastened a bottle-cork, by means of a strong wire running through it, bent at right angles below, and bent twice above, so that one end may be driven into the base to hold it in place. This arrangement is shown in figure 5. To hold the mirror, the strong wire *w*, is provided, which passes through the cork, and has soldered at one end a piece of thin tin plate (*a, b*) to hold the mirror, and at the other end a nickel cent, or any other contrivance to answer as a head by which the wire may be easily turned. The mirror—a piece of looking-glass—is held in place by turning down the corners of the piece of tin (*a, b*) to catch and hold it. It will be seen that by this arrangement the mirror can be rotated, and by revolving the cork upon its wire, it can have a right and left motion; by these two motions the light from the mirror can be greatly varied, as for

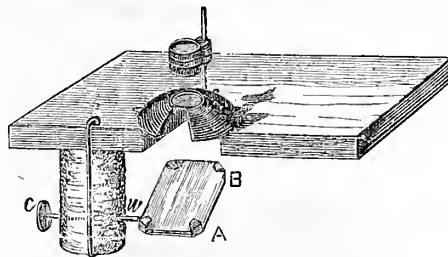


Fig. 5.—ARRANGEMENT OF MIRROR.

some objects an oblique light is better than a direct one. Mr. K. says that the whole outfit, soldering and all, cost him but 15 cents, and he finds this manner of mounting much preferable to that upon a cigar box, as before described. Those who can not readily get the curtain fixtures, can make a similar mounting of all wood, as shown in figure 6, where *a, b* is the base, *c, d* two wooden posts fastened to it; between these is another similar post, *f*, attached to the foot which holds the Microscope; this goes between the two lower posts, and through all three passes a bolt with a nut. The mirror and all other arrangements are to be as already described. I supposed we should not have any new mountings to describe, but this of Mr. Kilbourne is so ingenious, and so much easier to carry out than it looks, that I thought it would please many of you. Still I must not forget to speak of

Objects to be Looked for,

and as in this I have kept well ahead of the season, most of you will be likely to find the objects mentioned last month, and in March and February, now, rather than earlier; but in these matters I have to recollect that there are youngsters who are enjoying spring, while others have not put away their sleds and skates. Objects will now be so abundant that you will hardly

need to have them pointed out. This month, in the Northern States, will be a great time for fishing in the pools and ditches before they dry up, as most of them do before long. You have not, I hope, forgotten the Frog-spawn and the Snail's-eggs, described in March. If you take a glass jar, such as fruit is preserved in, and dip it full of water as suggested last month for finding the *Volvox*, or "Revolving Globe," you will be very likely to catch one or more kinds of what are called

"Water Fleas."

They are not Fleas though, but belong with the shrimps, crabs, and lobsters, in the class called by naturalists, *Crustaceans*. To get some specimens from which to make a drawing, I sent Master Ferdie to a pool I had noticed a short distance down the road, to get a jar full of the water. He came back, thinking that he had caught nothing, but upon holding the jar up to a strong light, I showed him that he had a regular menagerie of "Water-Fleas."

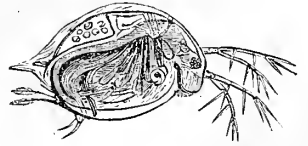


Fig. 7.—WATER-FLEA.

These creatures are called "Water Fleas" from the jerking manner of their movements, for they do not swim in a straight-ahead-way, but go by jumps. To draw one of these creatures, it had to be caught with the Dipping Tube, described last month, (fig. 9). Placed in the cell of the Microscope, with a few drops of water—enough to allow it to move about, it could be readily examined. This particular "Water-Flea," and you will no doubt find others, is called by naturalists *Daphnia*. A thin, transparent shield covers the animal, but it is open at the lower edge, and allows the parts of its body to protrude, as you can see when it jerks out its tail and other parts. If you catch a female, you will be very likely to find some eggs, which she carries between her shell and her body. The most common of our "Water-Fleas" is shown in figure 7. Among the curious things to be looked for now, are

The Vorticellas

which you may often find in pools, attached to chips and other matters. If you find on a stick, leaf, or other thing from one of these pools, a mere speck of cottony white stuff, you will possibly find the *Vorticella*. I have rarely failed to find it on the stems of flowers that have been kept in water for a long while, or you may make

Some Hay Tea,

and be very sure to get this, and other curious creatures, after a while. Make a wisp of hay, place it in a dish, and make an infusion, or tea, by pouring hot water over it; then let it stand for some days. The creatures thus found in infusions of vegetable matter, were called *infusoria*, a term which you will find in use for minute animals of various kinds. The *Vorticella*, or the one I have usually found on the hay, after it has been in steep for several days, is shown in figure 8, as it appears under the Microscope. It has a bell-shaped body on a long stalk. The mouth of the bell has a fringe of hairs; these being kept in constant motion, carrying water into the bell-like body, and with it creatures still smaller than itself, upon which it feeds.

Each bell is attached to a stalk, which can on the instant coil itself in a spiral, and bring the bell-shaped part, which also shuts up, down to the point where it is attached. I know of no more curious creatures than these, and which, with a fair amount of patience, you can find either on decayed vegetable matter in pools, or can breed, as I have described, in an infusion of hay. It is a little late in most places for the flowers or "tags" of the Alders and Hazels, but where these, and

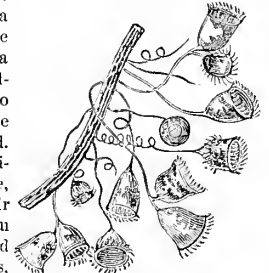


Fig. 8.—VORTICELLA.

The Willows and Poplars

are not gone, you will find them worth examining. You will see that all, whether the "tags" upon Hazels, Alders, Poplars, and Willows, are each made up of a number of scales, underneath which you will find stamens only in the first two, but the tags may, in the willows and poplars, have either stamens or pistils, but only one kind in the tag from each tree. But most of you will like to look at flowers made more after the regular style than these. You will find very early, almost as soon as the snow goes off, the Chickweed, and its relatives, the Mouse-ear Chickweed. The flowers of these are very small, to be sure, and I mention them because, though small, they are quite as perfect in their way as any flowers. It is very likely that you may find some notes about the Microscope among the Basket Items. THE DOCTOR.

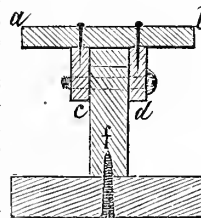


Fig. 6.—WOOD-FIXTURE.

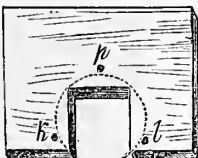


Fig. 2.—BASE.

Little Gardeners and Little Gardens.

When we saw the picture given below of the "Little Gardeners," in an English magazine, "Our Little Folks," we thought it one that would please our little folks, for no doubt there are already many little gardeners among them, and we wish to have many more. Every one of our *American Agriculturist* family of youngsters should have a garden of some kind, and grow something. Those who live in the country, where land is not counted by feet and inches, but where there is so much room that there is no trouble as to the space, should be sure and have a garden of good size. Those who live in villages,

where each house has a good sized yard and garden, can no doubt, if they ask for it, and agree to take care of it, have a small hed—a few square feet that they can call their "garden." But we must not forget that a great many of our readers live in cities; the parents of many of our youngsters, who are in crowded towns and cities, take the *American Agriculturist* because they expect to move into the country at some future time; others because they were brought up in the country, and love to read about it; others for its useful articles in addition to soil culture; and so in this way we have many readers among city children. What shall these do for a garden, whose back yard is hardly large enough to allow of the drying of the weekly washing? They must take to window-boxes, or even to pots, and whatever will hold earth. They can make a very good window-garden in a common wooden box, 6 or 8 inches broad and deep, and as long as the window-sill. A box of this kind, strongly

nailed all around, and filled with earth to within an inch or so of the top, will allow of the growing of many interesting plants, and be a source of a great deal of pleasure. Of course, it would be better to have a regular garden with a plenty of room, in which to grow a great many things, but those who really love plants, will contrive to have them somehow, and will content themselves with even one, if no more are to be had. In the engraving we have a fine place in the country, with an abundance of room for the garden, and it is evidently a place where there is a gardener who has supplied the children with plants already partly grown in pots, which they have only to set out in the garden, where they will grow on and bloom. This is all very well for those who are so situated that they can have such things, and as on such places there is a gardener, the children who can make their garden in this way, will need no help from us, as the gardener will tell them what to do with the plants. But the great majority of our youngsters will start their garden, be it large or small—even a window-box, with seeds. Of course there are many desirable plants that are not raised from seed; the florists raise these from cuttings, and sell the small plants in little pots. Those who can afford it, can purchase these, but we will assume that in our "little garden" the plants are to be all raised from seeds. Did you ever think what a wonderful thing a seed is? No matter if a mere speck—like a Petunia seed, or as big as a bean—each seed is a perfect wonder. Though to all appearances, lifeless, dry, hard, and unpromising, expose it to the proper conditions, and a plant soon comes from it! We go to see wonderful tricks of magicians, who burn up a handkerchief, and afterwards return it all nicely ironed and perfumed, and wonder at it—but no trick ever played by the most skilled of these performers is half so wonderful as the production of a green, living, growing plant from a seemingly dead and dry seed. Yet this, which is almost a miracle, is so common, is constantly going on all about us, that we do not stop to think how very grand it all is. The farmer scatters what seems like dry and lifeless chaff, and there appear acres of green meadow—yet what happens in each little grass seed, is as wonderful in its way, as the motions of the planets. But before we talk of sowing the seed, and

what happens after it is sown, let us consider what we shall sow. Here we are met with a difficulty—young people have not, generally, much money to spend. We could take a seed catalogue, and pick out a list of the best—but perhaps most of you could not buy them. Many of you saved seeds last year, no doubt, and can exchange these with others who have done the same. Then many of you must know those who have gardens, who will willingly give you seeds, for real lovers of flowers are always liberal in this way. Still many, to get a start, must buy. The beginner should start with *annuals*—i. e., those plants which bloom the first year from the seed. Most seedsmen put up collections for 25c., 50c., or \$1, of the best annuals, and probably seeds may be had

are the principal points: 1st, "sufficient heat."—If you were to sow your Balsam, or your Portulaca seeds, as soon as the ground thaws, but while it was still cold, you would probably not find one to come up. The Sweet Pea, and some others, might stand this treatment, but as a rule, seeds should not be sown until the ground is well warmed. 2d, "sufficient moisture."—If you sow your seeds in perfectly dry soil, no change will take place in them; they will be at the end of one month, or six months, just as they were put in; place them in moist soil, but not wet, and they will soon swell, burst, and a little plant will appear, and this has a relation to 3d, "sufficient air."—We can not now give space to tell you all about seeds, or why they should need air; you



"THE LITTLE GARDENERS."—Drawn and Engraved for the *American Agriculturist*.

more cheaply in collections than in any other way. If about to start a garden at the least expense, we should buy the seeds in "mixed" packets, and thus get a number of varieties for the price of one; each packet of mixed seed will give several varieties, from which seeds can be saved for next year—the different colors being kept separate, and thus a large supply be had for another year. The catalogues of the seedsmen offer the varieties of each plant—Asters, for example, a dozen or more distinct varieties in separate packets; and then, "finest mixed" at the same price of the separate packets. If the mixtures are fairly made, and we have no reason to suppose that they are not, a packet of mixed seeds should give from three to six different colors, from which the seeds may be saved separately. Taking the popular annuals, our selection would be, for those sold at 5c. the packet, Asters; Balsams (Touch-Me-Not); Candytuft; Convolvulus (Morning Glories of the finer kinds, for we must have some climbers, you know); Mignonette (should be in every garden, for its fragrance); Sweet Peas (charming low climbers, and excellent to cut); Petunias; Drummond's Phlox (*Phlox Drummondii*, one of the most brilliant of all annuals, and in great variety); China Pinks; Portulaca; Stock Gilliflowers (called Stocks, the Ten-Weeks sorts are best); Double Zinnias (showy, large, and for the garden only). If some wish to expend more on a greater variety, they can easily do so, but we have in mind a small expenditure, and such plants as are likely to be satisfactory in a large or small garden, or even in a window-box, and we have tried to name such as will be showy in the garden, and for the most part, useful for cut-flowers. We know those who never cut flowers, but are great admirers of them as they grow in the garden, and others to whom a flower is of but little value if it can not be cut, and placed in a vase in the house, or made into a bouquet.

We have mentioned the wonderful things that happen, when the dry and apparently lifeless seeds are "exposed to the proper conditions." In starting our garden, we must know what those "conditions" are, as, having bought, or otherwise procured our seeds, we wish them to give us plants. We must have 1st, sufficient heat; 2d, sufficient moisture; and 3d, sufficient air. These

must accept this and some other things as facts. Ordinary moist soil contains an abundance of air; wet soil does not, as the water fills up the pores of the soil, the seeds will have too much water, and no air; hence they can not grow. So your garden should not be too wet; in most of the States it is not likely to be too dry. A very good general rule, is to sow your seeds in the open ground at the time the farmers are planting their corn. Though our garden talk is already long, there are two or three things yet to be said. A great fault is sowing the seeds too deeply. Large seeds, like those of the Sweet Pea, and Morning Glories, may be put an inch deep, while the finer seeds, as those of the Petunia, etc., are so very small, that sown so deep as this, they would never be heard of. Such fine seeds need but the slightest possible covering with earth. All the seeds above named, may be sown where they are to stay, but all except Morning Glories, Mignonette, and Sweet Peas, may be as well trans-

planted as not. It may be that some of you do not know what transplanting means, so we will explain it. The seeds are sown, and the young plants allowed to get an inch or so high; then these little plants are taken up very carefully, a cloudy, damp day being the best, and planted out where they are to flower. You can, if you choose, sow the seeds of all the others, in a box, pan, or pot of earth, in a sunny window, and then transplant the young plants, when they get large enough to handle, to the garden, or you can sow them in a nice spot in your garden, and when large enough, set them where you wish them to bloom. We are always apt to sow seeds too thickly, and it is well to thin them, and set out the plants taken up in the thinning, in another place. If you must transplant when it is not moist and rainy, water the seed-bed well, and also the place where the little plants are to be set. Then after the plants are put out, and the weather is sunny, you must shade the little things, which may be done with shingles set so as to screen them, or by newspapers, kept from touching the plants by means of some sticks stuck near them. To keep the papers from being blown off, put some earth on their edges. Having thus far started your little garden, by telling you about sowing seeds, which may be those we have named, or any others that you can get, what we especially wish you to do is to watch the seeds as they come up, and how the little plants behave afterwards. In some cases you will see a pair of seed-leaves, as they are called, and the next leaves that appear will be quite unlike these—the "rough leaves," as the gardeners say. Your Sweet Peas will show no seed-leaves at all, while those of your Morning Glories will be large, broad, and green. If you love your little plants, you will watch all these things, and we will try to tell you more about them hereafter.

PLANTS FROM CUTTINGS, or "slips," as they are called, are often easily raised. If some friend gives you a "slip" of a Geranium, a Rose, or other plant, you have only to set it in a pot or box of very light sandy soil; pure sand is better than stiff clayey soil, and give it a plenty of light, but not much direct sun. Keep the earth moist, and usually in two or three weeks (and with some others much sooner) it will push out little roots, when it may be set out in better soil in the window-box or garden.



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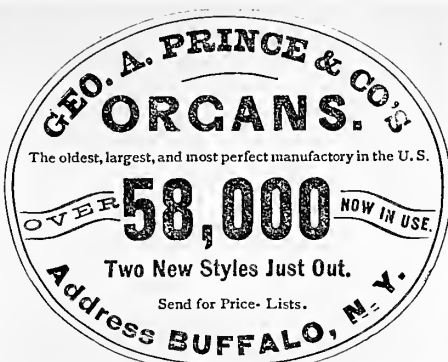
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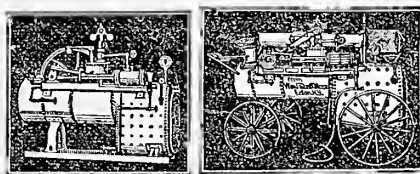
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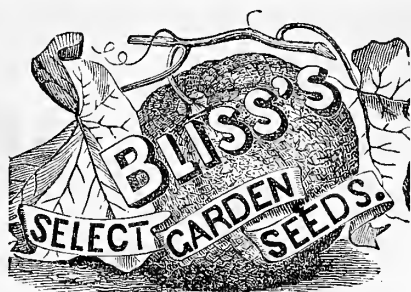
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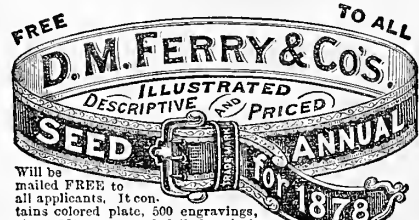
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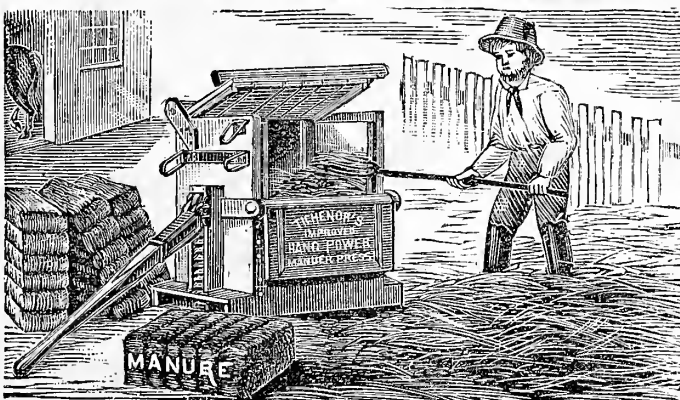
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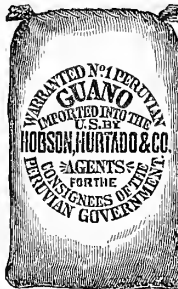
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GENUINE No. 1 PERUVIAN GUANO, \$56.
Russell Co's Super Phosphate of Lime, \$40.
Double Refined Poudrette, \$22.50.
Ammoniated Animal Matter (Bone, Meat, and Blood), unequaled for the price, \$22.50.
Ground Bone, \$27 & \$30.
Best Land Plaster, \$8 per ton, in barrels.
Send for TWENTY-THIRD annual pamphlet. Order direct of

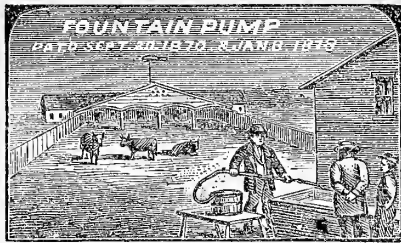
H. B. GRIFFING,
Dealer in Agricultural Implements and Fertilizers,
60 Courtlandt Street, New York.

Bone Meal.

Fine ground. Warranted pure. Manufactured by
S. H. MORGAN, Toledo, Ohio.
Send for Circular.

CHEAPEST FERTILIZER BECAUSE THE BEST. PREMIUM BONE

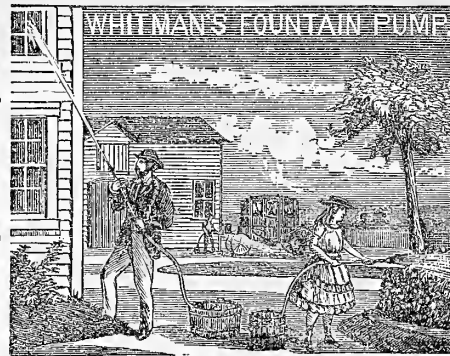
Grows WHEAT and GRASS, equal to manure, at Half the Cost, and lasts twice as long.
Farmers!! Send questions on Postal Card to EXCELSIOR FERTILIZER WORKS, Salem, Ohio. Circulars Free.



CLEANING PIPES, DRAINS, &c.

Having had occasion recently to open an obstructed drain, we procured one of Whitman's "Fountain Pumps." We found it very effective; a stream of water being forced from a barrel brought for the purpose, into the drain, clearing it completely in a very short time. The advantage of being able to procure a very considerable pressure, if needed, or to force a continued and rapid stream of water into the drain, is very obvious. Either of these may be done with the "Fountain Pump" better than with any other simple contrivance known to us. If mud or sand has become consolidated in the drain, the stream of water may be thrown into it with sufficient strength to break up the mass and wash it away. It is well to take the precaution in using force to clean a drain or water-pipe, to drive the obstruction back in the way in which it entered the pipe. Water-pipes or waste-pipes in a dwelling, that have become obstructed, may be cleared very rapidly with this force-pump.—*Am. Agriculturist, July, 1877.*

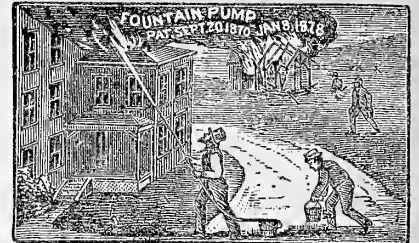
ASK
FOR
IT



WRITE
FOR
IT

"Adapted To Many Uses."

This pump, owing to its peculiar construction, is adapted to many uses for which an ordinary pump is unavailable. Its mechanism is simple. Vigorously handled the pump will throw a stream fifty feet, making it very useful in cases of sudden fire. Fire Insurance Companies endorse it on this account. It is portable in an unusual degree, as the operator may swing a pailful of water on his arm, and pointing the nozzle in any desired direction distribute water, mixtures, compounds, on trees, flowers, plants, insects, or anything that may require drenching. As an agent for the destruction of the Potato-Beetle and other noxious insects, it is invaluable. The distribution of Paris Green in a water solution is generally coming into favor, as the experience of many farmers, the past summer, was that the poison mixed with flour had a tendency to burn the leaves of the plant. The *Bee Keeper* reports that one of these pumps is a trustworthy agent for controlling bees while in the air, a plentiful spray from a "rose" nozzle causing the bees to come down without ceremony. It is also useful as a syringe for veterinary practice, and as for its household uses they are various, and will suggest themselves to all without prompting.



OXFORD, N. C., Dec. 11, 1878.

We have just had a fire in our town, and used the pump you sent us in June to great advantage. Indeed, we think it would have been a very disastrous fire had it not been for the pump. We think every family in a country village or town should have at least one.—H. C. & W. G. H.

The Ladies Like It,

The Men think It a Good Thing,

And the Children Cry for It,

LEXINGTON, Kentucky, May 31, 1877.

We took the pump along and created some little excitement. The ladies like it, the men think it a good thing, and the children cry for it.—J. W. C. & SONS.

No Dwelling, Country Home or Factory should be without the Fountain Pump. Send for Large Illustrated Circular. J. A.

WHITMAN, Sole Proprietor and Manufacturer, Providence, R. I.

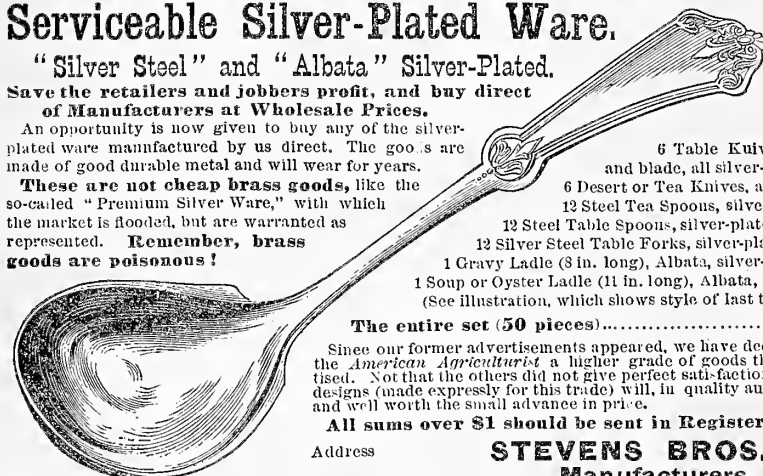
Serviceable Silver-Plated Ware.

"Silver Steel" and "Albata" Silver-Plated.

Save the retailers and jobbers profit, and buy direct of Manufacturers at Wholesale Prices.

An opportunity is now given to buy any of the silver-plated ware manufactured by us direct. The goods are made of good durable metal and will wear for years.

These are not cheap brass goods, like the so-called "Premium Silver Ware," with which the market is flooded, but are warranted as represented. Remember, brass goods are poisonous!



The entire set (50 pieces).....\$11.00

Since our former advertisements appeared, we have decided to give the readers of the *American Agriculturist* a higher grade of goods than those heretofore advertised. Not that the others did not give perfect satisfaction, but we feel that the new designs (made expressly for this trade) will, in quality and finish, be more desirable, and well worth the small advance in price.

All sums over \$1 should be sent in Registered Letter.

Address

STEVENS BROS. & CO.,
Manufacturers, Northford, Conn.

Established 1837.



The "Phoenix Brand"

PURE WHITE LEAD

IS MANUFACTURED BY

THE OLD DUTCH PROCESS,

the only true method to make the best lead; and, as we make perfectly pure lead only, consumers can always rely on its quality.

ECKSTEIN, HILLS & CO., Cincinnati, O.
SOLD BY DEALERS GENERALLY.

RAZOR STEEL

Pocket
KNIVES.

We send by mail, postage paid, a one-blade boy's knife, razor steel, for 25c.; a heavy one-blade knife, 4-inch, 50c.; a two-blade knife, 50c.; a heavy 2-blade knife, 60c.; extra thick 2-blade knife, 75c.; ebony handle, 3-blade, \$1; ivory handle, 3-blade, \$1.25; ladies pen-knives 25 to 75 cents; Razor Steel Pruning knife, 75c. to \$1. Our goods are hand-forged from best razor steel, and every blade warranted; we will exchange any found soft or flawed. We aim to build up a permanent trade. MAHER & GROSCH, Cutlery, Toledo, O.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.

POULTRY, GAME, BUTTER, &c., &c.

Also Agents for Hornby's Steam-cooked Wheat and Oats.

No. 279 Washington-st., N. Y.
(Est'd 1845.) Ref., Irving National Bank, New York City.

CALCICAKE;

or, Compressed Calcimine.

Something New for Walls and Ceilings. Beautiful and Economical. Ready for Use, and can be Applied by Any One.

AVERILL PAINT,

READY FOR USE.

This Paint is indorsed as the best by thousands who have used it during the past twelve years. Beware of imitations. Send for Sample Cards, furnished free by the

AVERILL CHEMICAL PAINT CO.,

32 Burling Slip, N. Y.; 171 East Randolph St., Chicago; 132 East River St., Cleveland; N. E. Cor. Fourth and Race Sts., Philadelphia; 191 High St., Boston.

J. LLOYD HAIGH,

Manufacturer of

Steel and Iron Wire, and Wire Rope

Of Every Description.

Galvanized Wire Clothes-line, Fence and Vineyard Wire, and Fence Staples.

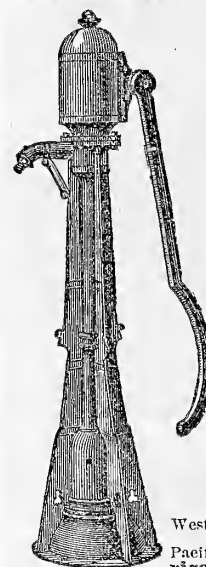
Price Lists with full particulars on application.

Offices No. 81 John St., New York City.
P. O. BOX 2,339.

RANDOLPH'S NEW DITCHER,



REVERSIBLE—Double End—doing work of sixty men by horse-power at cost of six! Steam Machines, costing less than \$10 per day to run, doing from \$100 to \$140 work. Circulars from RANDOLPH BROS., 111 Broadway, New York.



W. S. BLUNT'S UNIVERSAL FORCE PUMPS.

Secured by letters patent.

These pumps have enormous power, and are for the house or for out-door wells of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.—A complete protection against sand or gritty water in dug or driven wells, pits, mines, and rivers. For hand or steam pumps, all sizes, from 1/4-inch to 4-inch suction pipe.

Send for circulars to
NASON MFG CO.,
71 Fulton and 71 Beekman St., New York.
Western Agency, Newton & Hale, Chicago.
Pacific Coast Agency, Dunham, Carrigan & Co., San Francisco, Cal.

A. B. GUNNISON,
MANUFACTURER OF

Cucumber Wood Pumps

For Wells and Cisterns.

Agents Wanted. Send for Circulars.

ERIE, PA.



More than 300 Different Styles

LIFT AND FORCE PUMPS,

HYDRAULIC RAMS, &c.

Send for Circular and Prices.

RUMSEY & CO.,

Seneca Falls, N. Y., U. S. A.

Portable Pump—Fire Extinguisher.

With Graduating Sprinkler—jet, spray, or finest mist at will; as Garden Engine and insect destroyer, the most efficient and cheapest ever sold. Send for illustrated circular
N. PAGE, JR., Wakefield, Mass.

THE DRIVEN WELL.

Town and County privileges for making Driven Wells and selling Licenses under the established American Driven Well Patent, leased by the year to responsible parties, by

WM. D. ANDREWS & BRO.,
NEW YORK.

Say
where
you
saw
this.



Champion Combination and Youth's Companion Foot Lathes, Amateur Steam Engines & Boilers, Cylinder Saws and Slaw Machines, Send stamp for price. Strange's Cylinder Saw & Mach. Co. Taunton Mass.

will make a cord of wood, if it is growing in close timbers, and the limbs are not heavy. If the limbs are large and spreading, such a tree will make $1\frac{1}{4}$ to $1\frac{1}{2}$ cords. A tree one foot in diameter will make only a fourth as much as one twice the diameter. In estimating, it is necessary to remember this fact.

Green Manuring.—"C. E. S.," Lewiston, Me. Plowing in green crops is a good way to begin in renovating a run down farm, but more than that is needed. It is difficult at first to get a heavy crop to plow under, and a light crop does little good. It is best to use some artificial fertilizer, such as Peruvian guano, or the prepared chemical manures, to help the first crop. When land will produce a fair burden of clover, and that is plowed in, a very good beginning is made; but that must be followed by a regular course of manuring and cropping, else the benefit will soon be lost again.

Rotting of Sod.—"R. P. H.," Towah, Wis. Sod from a natural meadow decomposes very slowly, nor do we know of any rapid method of hastening the process, except the addition of plenty of lime. If the partly rotted sods are intended for the fertilizing of light land, we would suggest that they be spread upon the surface now and plowed in as early as possible. They will rot more quickly in that way than any other.

Artificial Fertilizing.—"G. W.," Northampton Co., Pa. We do not doubt that a farm may be very easily carried on with but little live stock and grain sold yearly to pay expenses, by a system of chemical fertilizing, with an occasional green crop plowed in. But the most profitable branch of agriculture is raising live stock, either for meat or dairy purposes, growing grain to feed them, adding some purchased foods, and using some artificial fertilizers to help out what is made on the farm; while the poorest business is growing grain for sale only. Different fertilizers are compounded by the dealers to suit the needs of various crops.

Questions for Discussion.—The Volina (Mich.) Farmers' Club have the following programme of subjects for discussion for the present year, viz.: Breeding and management of hogs; clover and its management; farm stock, kinds, proportions, and management; (a volume might be written on this subject); corn, its varieties and cultivation; sheep shearing, show of stock and implements in May; wheat, varieties and cultivation; Town Fair in October; experience meeting in November; and in December an address by the President.

The Oxford-Down Ram "Freeland."—T. S. Cooper, "Linden Grove," Coopersburg, Pa., writes in regard to the noted Oxford-Down Ram "Freeland" as follows: "In your issue of last November appeared a portrait and sketch of the celebrated Oxford-Down Ram 'Freeland.' Will you kindly allow me to state that 'Freeland' was bred by and belonged to Mr. A. J. Milton Druce, Eynsham, England, who, in 1875, hired him for the season to Mr. John Treadwell for 50 guineas. In 1876 I hired him at public auction from Mr. Druce for 85 guineas, and in 1877 purchased him outright for a long price from that gentleman. He is now at Linden Grove, where I intend he shall end his days. I have forwarded you my Catalogue by this mail, from which you will be able to gather some interesting particulars concerning the breed generally, as well as a history of 'Freeland,' and the number of prizes won by him in England. He has done excellent service in my flock of imported ewes this fall, a number of which I have retained for my own breeding, so convinced am I of the superiority of the breed for general purposes in America. With my Oxford-Downs I won the flock prize of \$100 at St. Louis last fall, a pretty good tribute to the excellence of the breed, and my correspondence has of late been largely increased, owing to the numerous inquiries received respecting them, which also shows their growing popularity. In booking orders for spring lambs I shall soon have reached the length of my tether."

Can Potatoes be Raised Perpetually on the Same Soil?—"F.," Aroostook Co., Me. There is no reason why potatoes should not be grown year after year upon the same soil, if proper fertilizers are supplied. But there is no necessity to do this. Potatoes may be grown once every four years, by making a rotation of grass and clover, potatoes on the sod, and wheat, rye, or other small grain or perhaps a crop of peas, or oats, intervening. On 100 acres there may then be 20 to 25 acres of potatoes yielding \$1,000 each year, which is a handsome money income. Potatoes take from the soil chiefly potash and lime, and if the waste and vines are returned, there is little exhaustion.

The Cultivation of Cranberries.—We hear occasionally of large profits from cranberry culture, but rarely of the losses. That many undertakings in cranberry growing have been altogether the reverse of

profitable, is as true as that many have paid handsome returns. There is no culture which requires such peculiar conditions, and unless these are naturally present, or artificially provided, failure is very sure to follow. Because cranberries often grow wild in abundance, many think they need but little care, while the fact is, their natural localities are of a kind very difficult to imitate. No one should invest money in an attempt to grow this fruit, without first thoroughly understanding its requirements, and making sure that he can meet them. The essentials are: a soil of peat or muck; an abundant supply of sharp sand, without admixture of clay, and water under control. The water system must be so arranged, and the supply sufficient, to allow the meadow to be completely flooded at will, and on the other hand the drainage must be such, that no stagnant water will remain around the roots of the plant, but there must be free drainage to 12 or 18 inches below the surface. Every one of these conditions is essential, and relates to the locality. This will serve as a general answer to the inquiries that come each spring, concerning cranberries. These points, with all other matters in regard to establishing and managing a cranberry meadow, are given in full detail in "Cranberry Culture," by J. J. White, a practical New Jersey grower, which is a remarkably complete work on a special culture, and should be thoroughly studied by every one who proposes to undertake cranberry growing. Like other practical and impartial works, a part of its usefulness consists in showing the folly of attempting the culture unless all the conditions may be met. Sent post-paid by Orange Judd Company, for \$1.25

Glasnevin.—A friend kindly calls our attention to the fact that last month we inadvertently, not ignorantly, wrote Scotland, instead of Ireland, in speaking of a well known Botanic Garden near Dublin.

Effect of Ashes—Salt.—"E. D. S.," Orleans Co., N. Y. 20 bushels of ashes per acre drilled in with grain, would almost certainly destroy the seed, or at least the tender sprout when it germinates. Ashes are always best scattered upon the surface. As ashes are not so quickly soluble as most commercial fertilizers, a larger quantity needs to be used, and as they dissolve slowly, the effect is more permanent. Salt is used as a fertilizer at the rate of 1 to 5 bushels per acre.

Sheep Shears.—"G. B. S.," Cooper Co., Mo. After having tried several so-called improved sheep shears, we prefer the common kind. Those with teeth, or guards, to protect the sheep, give no protection in unskilled hands, and they gun up so much that the work is very tiresome to the wrist and arm. If there is a better shears than the common one, we want to find it.

Flat Cultivation of Corn.—"G. W. W.," Memphis, Tenn. The flat cultivation of corn is generally considered preferable to hilling or plowing up to the rows. We have practised the method for some years, and prefer it to plowing up ridges or hills. Planting in drills is not only more convenient, but there can be more corn grown upon the same ground than when in hills or squares, and the cultivation on the flat will be found cheaper, and, if properly done, equally cleanly.

Trouble With Field Mice.—A note from Coles Co., Ill., states that the district is over-run with field mice, to the great loss of the crops. How many boys are there in Coles Co. of the age of 12—indeed how many men "big enough, old enough, and ought to know better," who will not go out of their way to kill everything in the shape of a snake—for no other reason than it is a snake, and consequently no business to live? The harmless reptile is, in reality, fulfilling the object of its existence quite as well—to say the least, as the boy or man who kills it. How many boys (or males big enough to be men), who own, or can borrow a gun, will not shoot at, or indeed, spend half a day in hunting every little owl, or Sparrow-hawk, or Mouse-hawk? The last of these lives almost solely on field mice, which also form the principal food of most of the smaller birds of prey. If we will persist in killing, or in allowing to be killed, the insect-eating birds, we must expect insects to increase. If we will destroy or drive away the birds and snakes provided to keep field mice in check, we must kill the mice ourselves, or suffer the loss of our crops.

Catalogues Received.

Generally the list of Nurserymen's, Florists, and Seedsmen's catalogues ceases with April, and is not resumed until the announcements for the fall trade come to hand, but here are several that have been belated or omitted from one cause and another. Very full lists will be found in our issues for March and April.

NURSERYMEN.

A. HANCE & SON, Red Bank, N. J., send special list of a surplus stock, and one describing the Honeywell Peach,

YORKUM & Co., Larissa, Cherokee Co., Texas. It will do our Texas friends little good to notice this catalogue now, but we would call attention to an excellent feature in it. For each kind of fruit they give a "Superlative List" of varieties thoroughly tested and commended for Texas, and besides a "General List."

SEEDSMEN.

B. K. BLISS & SONS, No. 34 Barclay St., N. Y.—An extra catalogue, which should have reached us last month. It contains important novelties in field seeds (including potatoes), vegetable and flower seeds; abundantly and handsomely illustrated.

CROSMAN BROTHERS, Rochester, N. Y.—The catalogue of this long-established house is as full and as neat as usual, and we fear that it is our own fault that it was not noticed last month.

C. H. HOVEY & Co., 22 Tremont St., Boston, Mass., besides the catalogue of plants, noted in March, send another of seeds and plants, compact and comprehensive.

E. L. MEYER, "Druggist and Seedsman," Hutchinson, Kas., a full, useful catalogue of garden and farm seeds.

FLORISTS.

GREENBROOK AND PATERSON NURSERIES, J. Grieves, Sec., Paterson, N. J.—Very full in the way of description and cultural directions, mostly for greenhouse stock.

LONG BROTHERS, Buffalo, N. Y., send their list of Dollar Collections, of which there are 30, and very cheap they are. Besides this, they send their general catalogue of plants, very neat and compact, with a list of seeds.

J. WARREN MERRILL, Cambridge, Mass., makes a specialty of native and exotic Ferns; his list is very full; those desiring to exchange or purchase, may address his gardener, A. B. Gilbert, Cambridgeport, Mass.

AGRICULTURAL AND HORTICULTURAL MACHINERY AND APPLIANCES.

ADRIANCE PLATT & Co., No. 165 Greenwich St., N. Y., send two publications relating to the "Buckeye" Mower and Reaper. The same perfection attends these publications that characterises the machines they describe. One illustrates the mowers and reapers at work and on the road, and each picture is a work of art. The horses are at work, the men are driving, and there are no "lay figures." The other gives every extra part to each machine, from the driving-wheel down to the smallest screw, showing a wonderful attention to details, and making a work valuable to every owner of a "Buckeye."

THE BEECHER BASKET CO., Westville, Conn.—An illustrated catalogue of their well known baskets and crates.

THE BELCHER TAYLOR & Co., Tool Co., Chicopee Falls, Mass.—Full illustrated catalogues of the "Bullard Hay Tedder," and "Proust's Hoeing Machine," both of excellent reputation.

BOOMER & BOSCHERT, Syracuse, N. Y.—We described their remarkable cider and wine Press, as seen at the Centennial, in the *American Agriculturist* for July, 1877. This fully illustrated catalogue gives every detail.

WM. L. BOYER & Co., Philadelphia, Pa., Farm grist mills for grinding all sorts of grain; fodder-cutters and a clover-seed gatherer which harvests one acre per hour.

GARDNER B. WEEKS, Syracuse, N. Y., Dairy Apparatus and supplies, including steam-boilers and engines.

H. B. GRIFFING, 60 Cortlandt St., N. Y., all sorts of machinery, fertilizers, and tools for the farm; including the popular Kirby mower and reaper, with hay and straw-presses, and the new manure-hauling press. Also city stable manure put up in small bales of 300 lbs. each.

HUBBELL & CHEESEBORO, Geddes, N. Y.—A stone-ware package, glazed inside and out, for butter.

JOHN L. KIPP, No. 163 Eldridge St., N. Y.—A catalogue of the wares made at the "Kipp Wagon Works," including carts and trucks, hand-carts and wheel-barrows in an astonishing variety, each style illustrated.

NEW YORK PLOW CO., Beckman St., N. Y., make the Nishwitz Harrow, the Adamant Plow, and various other improved farm machines.

N. PAGE, JR., Wakefield, Mass., continues to make his Pump and Sprinkler, illustrating it in two catalogues.

B. W. PAYNE & SONS, Corning, Steuben Co., N. Y.—An illustrated catalogue of the various forms of portable and stationary steam-engines made by them.

RUNSEY & Co., Seneca Falls, N. Y.—This catalogue, of 160 large pages, might well be called an illustrated treatise on Hydraulics. Almost everything contrived for raising water, from the simplest Pitcher Pump, through all sorts of force, hand and steam pumps and Water Rams, up to the large Fire Engine, including every possible accessory, from a screw, up to the trumpet of the Captain of the "masheen," is here given in full.

THE YALE VERTICAL GRIST MILL, made by the Yale Iron Works, New Haven, Ct., also engines for small boats and yachts, lathes and other machinery.

J. R. WHITTEMORE, Chicopee Falls, makes, and Whittemore Brothers, Boston, also sell, the Victor Feed Cutter and the Champion Horse Rake, of which they send illustrated descriptions.

J. C. WOOD & BROTHER, Fishkill, N. Y., send an illustrated catalogue of berry baskets, crates, and other fruit packages, including the small peach basket which we introduced to Eastern fruit dealers a few years ago.

LIVE STOCK.

HERBERT MERRIAM, Cherry Brook Farm, Weston, Mass., Ayrshire cattle; Yorkshire and Berkshire pigs.

BELLEVUE STOCK FARM, Dundee, N. Y. Celebrated Stallions for the season of 1878. Details are furnished by N. Powlison, Supt. of the farm.

EDWARD LUTZ, 80 5th Avenue, Pittsburg, Pa., Brown Leghorn fowls.

J. H. MORRISON, Marlow, Cheshire Co., N. H., Plymouth Rock fowls.

MISCELLANEOUS.

AGRICULTURAL INSURANCE CO., Watertown, N. Y.—Insures only farm property and private residences. They

describe their business, and give figures in a neat circular. J. S. BACH & CO., 38 Dey St., N. Y., illustrate in a neat pamphlet a wonderful variety of their self-adjusting watch keys, and other specialties.

W. H. CUMMINS, Milford, Conn., sends catalogue of his Plymouth Rock fowls.

J. A. PARK & Co., Lansing, Mich.—Illustrate and describe their "Harvard and Yale" Chair Desks.

L. C. Root, Mohawk, N. Y.—Bees; things to keep them, and to smoke them out, Honey Extractors, and all such "apiarian notions."

L. H. RUSSELL, Stratford, Conn.—Scroll saws, materials and patterns in endless variety.

GEO. W. SIMMONS, Newark, Del.—Hives of various kinds and apiarian supplies in general.

ERNEST STEIGER, 22 and 24 Frankfurt St.—German books of all kinds, kindergarten literature, scientific periodicals, and various special catalogues.

OSCAR W. YOUNG, 60 4th St., Brooklyn, N. Y.—A priced and numbered catalogue of the beautiful scrap-book figures, to which we referred some months ago.

DRY GOODS!

BY MAIL OR EXPRESS.

Sent to any part of the United States by

JORDAN, MARSH & CO.,

of Boston, the Largest and Oldest Dry Goods House in New England. We are now offering our immense stock at retail, at prices lower than were ever quoted at wholesale before the War. These unparalleled Bargains have crowded our immense stores with customers from all parts of New England, and we desire every one in the Middle, Western, and Southern States to take advantage of these the greatest bargains ever offered in America. Send at once for our new catalogue, complete in every detail of description and price.

JORDAN, MARSH & CO.,
Boston, Mass., U. S. A.

Harvard University,

Cambridge, Mass.

Summer Instruction in Science, for 1878,
For Teachers and other Adults.

Courses of Instruction will be given as follows:

- I. General Chemistry and Qualitative Analysis, by Mr. C. F. Mahery, Fec, \$25.
 - II. Quantitative Analysis and Chemical Technology, by Mr. H. B. Hodges, Fec, \$25.
 - III. Determinative Mineralogy, by Mr. W. H. Melville, Fec, \$25.
 - IV. Phenogamic Botany, by Prof. Geo. L. Goodale, Fec, \$25.
 - V. Geology, by Prof. N. S. Shaler, Fec, \$50.
- Each Course will last six weeks. The first four courses will be given at Cambridge, and the fifth at a camp near Cumberland Gap, Kentucky. The fees are payable in advance, by mail or in person, to Allen Danforth, Bursar, Cambridge, Mass.

A circular which gives full information about these courses may be obtained by applying to JAMES M. HARRIS, Secretary, Cambridge, Mass., enclosing a stamped envelope.

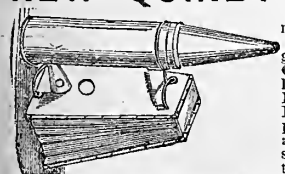
HUNGARIAN AND GOLDEN MILLET.

Cuts 4 to 6 tons per acre, best fodder. Shipped everywhere at \$1.50 per Bushel. Circulars free. Address
CROSBY & GORDON, Danbury, Conn.

HIRES ROOT BEER PACKAGE

Makes 5 Gallons of Delicious Root Beer for 25 cts. Made from Pipsissewa, Sarsaparilla, Dandelion, &c. To Farmers and Laboring Men it will be found an agreeable, refreshing Beverage during the Summer months. Manufactured only by C. E. HIRES, Wholesale Botanic Druggist, No. 9 Letitia St., Philadelphia, Pa. Ask Your Druggist for it.

NEW QUINBY SMOKER,



An indispensable implement for handling bees. Italian swarms and queens. Quinby's Clasp for corners of hives. "Bee-Keeping Explained," by Quinby. Bee Veils, a complete protection for the face, and general bee-keeping supplies. Send for Illustrated Circular.

L. C. ROOT, Mohawk, Herk. Co., N. Y.



ORANGE JUDD CO.,

245 Broadway, New York City,

Publishers of Books on Agriculture, Horticulture, Architecture, Field Sports, Horses, Cattle, Poultry, Bees, Swine, Sheep, etc., etc.

Descriptive Catalogues free to all applicants.

A MOST DELIGHTFUL RESIDENCE for any Family.—EDUCATIONAL Advantages UNSURPASSED, from Primary Schools up to the best COLLEGIATE.—Society most Desirable in every respect.—CITY and COUNTRY advantages admirably combined.—One of the most attractive Residences for a well-to-do family, in one of New England's most beautiful "City-towns"—For SALE or to LEASE, for one, two, or three years, furnished or unfurnished, on very favorable terms, at a very low price. For particulars, address "RESIDENCE," care of *American Agriculturist*, 245 Broadway, New York.

THE COUNTRY HOME

IS AN

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FOR COUNTRY PEOPLE.—Farmers, Village Folks, and all who cultivate a garden or own a country home.—20 pages, handsomely illustrated.

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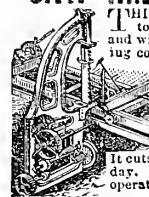
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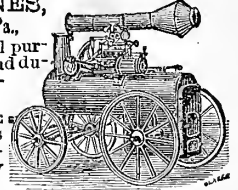
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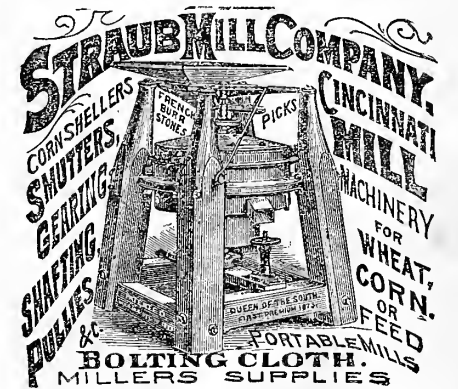
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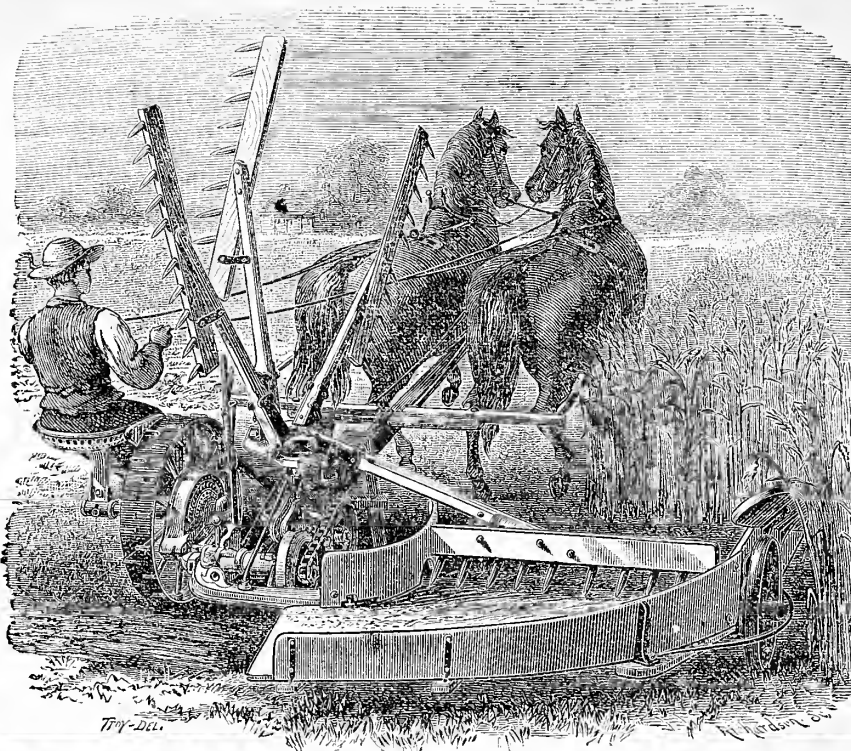
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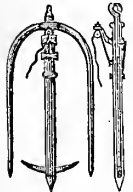
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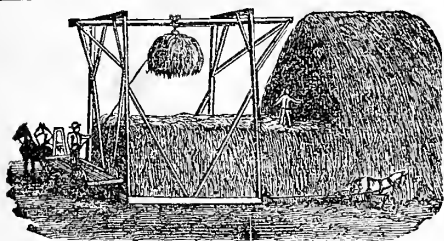
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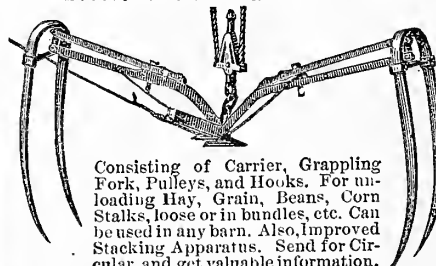
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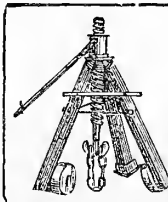
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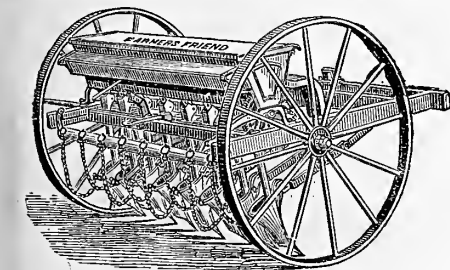
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SEVEN SIZES FOR HAND USE.
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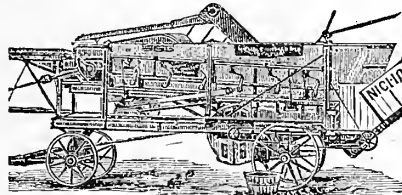
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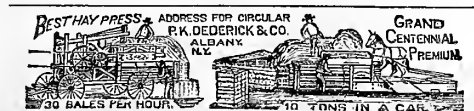
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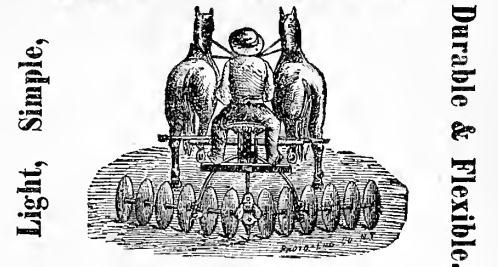
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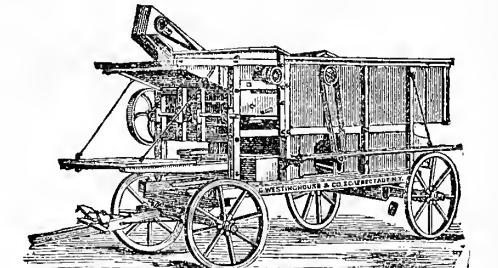


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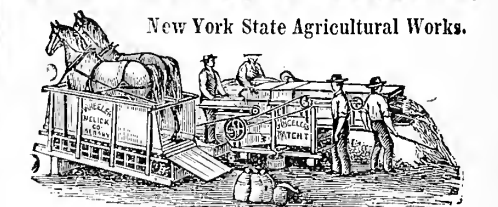
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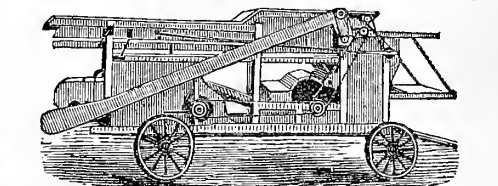
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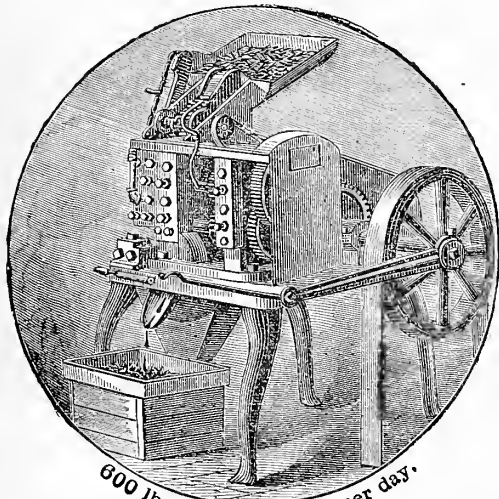
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600 lbs. Finished Nails per day.

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INTERNATIONAL EXHIBITION, 1876.
U. S. CENTENNIAL COMMISSION.

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Group
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XV.

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ST. LOUIS, Mo., June 8, 1877.
GLOBE NAIL CO., BOSTON, MASS.
Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the **Globe Nail**, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals,—horses in particular,—I desire to say a few words in favor of **The Globe Nail**. Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the **Globe Nail** in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say it has no superior in point of Toughness, Shape, and Finish, if it has any equal. I have used about fifteen hundred pounds of **Globe Nails** a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat! I am willing to pay, without any suit, for all horses that are lamed in my shop by using the **Globe Nail**. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

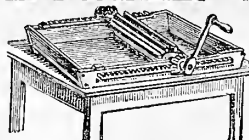
Yours Very Respectfully,

(Signed,) P. H. O'NEILL,
Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary.

The best Horse is sure to win. SO
CLEAR THE TRACK FOR THE
GLOBE NAIL CO.

BUTTER WORKER.



The most effective, simple and convenient yet invented. Works 30 lbs. in less than 5 minutes, thoroughly working out buttermilk and mixing the salt. AGENTS WANTED. Send for circular.

A. H. REID,
6 N. Eighteenth St., Philadelphia Pa.

BENSEL'S PATENT BUTTER COOLER.



The best and most convenient refrigerator ever invented, being made of porous unglazed earthenware, and is both simple, durable, and cheap. It operates without cost, using only water, and is specially adapted for warm climates. Sample boxed and sent by express on receipt of \$1.00. For circular and further information address



ACUSTUS REEVE,
31 Market St., Camden, N. J.

CHOICE BUTTER.

(From Massachusetts Agricultural College Farm.)
"AMHERST, MASS., Feb. 9, 1878. VERMONT FARM MACHINE COMPANY: We are so well pleased with the Cooley Creamer that I feel bound to say a word in its favor. It takes us only twenty minutes to churn, and the extra yield of butter is wonderful. I have cheerfully recommended it to the Japanese government above all other systems.
Yours very respectfully, A. A. SOUTHWICK, Farm Supt."
Address for circular,
Vt. Farm Machine Co., Bellows Falls, Vt.

The LANCASTER BUTTER CARRIER,
with a cup for each print, will deliver print butter to market in perfect shape. Also carriers without cups, for square or oblong prints. Prices low.

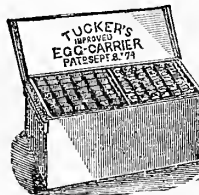
Can now furnish Initial Stamps for printing butter, any Initial or Initials to order. Sent by mail. Prices and circulars on application.
E. L. RESH, Lancaster, Pa.

BUTTER TO COLOR

Made to sell at Highest Price; will take Premiums. Dairy Receipt-Book free. Address, Mrs. B. SMITH, P.O. Box 1951, 72 N. Fourth St., Philadelphia, Pa.

HULL & SCOTNEY.

316 North Water St., Philadelphia, Pa.
GENERAL COMMISSION MERCHANTS,
and Wholesale Dealers in Butter, Cheese, Eggs, Poultry, Lard, Tallow, Game, Potatoes, Apples, Hay, Grain, Flour, Fur, Wool, Cotton, Peanuts, Broom Corn, Foreign and Domestic Fruits. Liberal Cash Advances made on all Shipments but perishable goods. Send for Price List, Stencil, &c., &c. Reference Cash, or we refer to any Responsible House in our city.



TUCKER'S

IMPROVED

Egg Carrier.

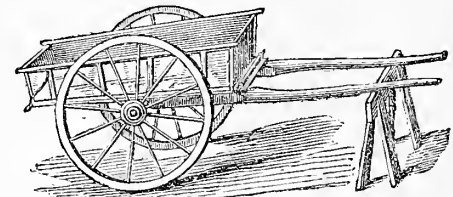
The strongest, safest, and best in use, having advantages possessed by no other. Agents wanted.

WM. C. BARKER & CO.,
Sole Proprietors and Manufacturers, 139 Market St., Phila., Pa.

CIDER PRESSES,

Apple Graters, Elevators, Etc.
BOOMER & BOSCHERT PRESS CO.,
SYRACUSE, N. Y.

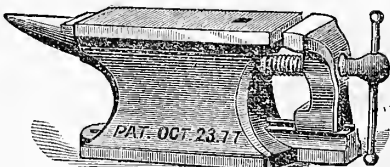
Farm Carts and Wagons



Always on hand and made to order. Also every description of Heavy Cart and Wagon for city and country use and for shipping. Illustrated Circulars free by mail.

JOHN L. KIPP, 163 Eldridge Street, New York.

ANVIL & VISE COMBINED.



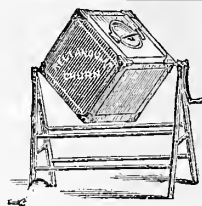
3 Sizes, No. 1, weight 40 lbs., \$4.50; No. 2, weight 25 lbs., \$3.75; No. 3, weight 14 lbs., \$3.00. The face of the anvil is chill-hardened, rendering it of sufficient strength and hardness to withstand all ordinary usage. Every farmer should have one. Terms cash. Delivered on cars at Worcester.
RICHARDSON MANUFACTURING CO.,
Sole Manufacturers, Worcester, Mass.

"GET THE BEST."

HIGHEST AWARD at the CENTENNIAL.



Cheap, because so well made, durable, and efficient. Nine sizes made, churning from one to 150 gallons. Warranted to be exactly as represented. Sold by all dealers in really first class Farm Machinery.
PORTER BLANCHARD'S SONS, Concord, N. H., Sole Manufacturers. Send for Circulars.



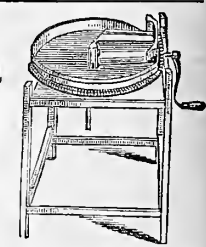
The Rectangular Churn.

Simple, efficient, and always reliable. No inside fixtures. Fifty per cent in labor saved over any other churn. Five sizes made. The Highest award given over all competitors at the late Dairy fair in Chicago. An energetic man wanted in every town, to act as agent. On churn sent at wholesale price, we have no agents.
CORNISH & CURTIS,
Fort Atkinson, Wis.

THE LILY BUTTER-WORKER

We guarantee it the best and cheapest Machine in the world. No hard labor. Mixes the salt thoroughly, and takes all the milk out, with five to ten minutes work. Circulars sent on receipt of stamp.

HENDERSON & CO.,
316 Race St., Phila., Pa.



WILLIAM CROZIER has much pleasure in calling the attention of Cow-keepers, Farmers, and Dairy-men to the **NEW SELF-MILKING APPARATUS**. This Apparatus or Cow Milker, has been tested by a large number of practical Agriculturists, Dairy-men, &c.; and, without exception, merited high encomiums and commendations, for its adaptability and wonderful rapidity in the Milking of Cows. It is considered one of the most invaluable and useful Machines yet invented.

Amongst its many advantages are—
1st—It is SELF-ACTING, easy of application; and can be used by any person, however ignorant of Milking.
2nd—It will Milk any Cow in FOUR Minutes effectually, and its use is more agreeable to the Cow than Hand-Milking.
3rd—It is a great boon in the case of Sore or Corded Teats.
4th—Its Usefulness, Simplicity, Saving of Time, Cleanliness, Durability, and Cheapness, prove it to be a most important and necessary adjunct to a Dairy, and it has only to become better known to be universally used.
Sent free on receipt of Post Office order for \$5.
Printed Instructions accompany each Machine.

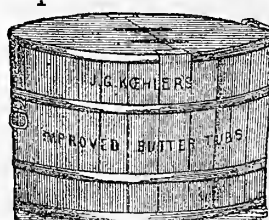
MILK TUBS.

COW-KEEPERS should not be without one of these, as they are invaluable for sore or Corded Teats.

PRICE \$1.00 each.

WM. CROZIER, Northport, L. I., N. Y.

Improved Butter Tubs and Coolers,



with movable Ice Chambers. Best in the market. Are made in 12 different sizes, of white Cedar, bound with galvanized iron or brass hoops. Within the tub is fitted a tin Cooler, having a movable Chamber for ice at each end. On the tin is constructed a series of ledges, on which rest the shelves for supporting the butter; suitable for round, half-round, and square prints or rolls. Can be locked for shipping. Will keep butter in good order from 18 to 24 hours. Capacity from 12 to 300 lbs. Price from \$3 to \$25.
J. G. KOEHLER, Manufacturer,
503 North 2nd St., Philadelphia, Pa.

Agricultural Insurance Company, of Watertown, N. Y.

Capital \$200,000.00. Net Surplus, \$201,329.97. Total assets for the security of Policy holders, January 1st, 1878, \$1,053,137.60. Insures only Farm Property and Residences against fire and lightning. Takes no business risks.



GOOD MEN WANTED

to sell the celebrated cow feller. It sells on sight. Warranted to make the worst kicking cow gentle to milk, in three days. There is nothing equal to it for breaking bellers. Retail price \$2. For further information send for illustrated circular to

H. J. SADLER,

Sole Proprietor,

Warren, Trumbull Co., Ohio.

"A most all Sowing Machine Dealers are now giving a JOHNSTON RUFFLER, TUCKER, and CORDER, free with each machine they sell."

TEAS REDUCED

OUR TERMS ARE THE BEST.
Send for our New Reduced Price List.
THE GREAT AMERICAN TEA COMPANY,
P. O. Box 5693, 31 and 33 Vesey St., New York City.

RELIEF FOR HARD TIMES!! A Sure Investment!!

BUY LAND OF
THE UNION PACIFIC RAILROAD COMPANY.

This Company has 3,000,000 acres of the Best in the world; for sale in NEBRASKA, at Prices and on Terms that make it cheaper to own a farm than be without. Short Winters! Long Summers! Come and see. Cheap fare from all principal points.

Write for information. Sent Free everywhere.

LEAVITT BURNHAM,

Land Commissioner U. P. R. R. Co.,

Cor. 9th and Farnam Sts., Omaha, Neb.

Refer to this advertisement.

Some Very Choice Nebraska Lands.

Selected with great care. Well located in every respect, and presenting a splendid opportunity to a few families, who wish to move West. Can be had at a bargain by addressing immediately,

AUGUSTUS SNOW,

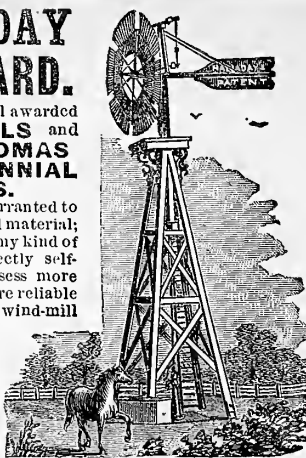
2 Exchange Court, Room 4,
New York City.

TUBULAR BOW SOCKETS FOR Top Buggies

HALLADAY STANDARD.

The only wind-mill awarded
TWO MEDALS
TWO DIPLOMAS
by the **CENTENNIAL**
JUDGES.

Every machine warranted to be well made of good material; to do good work in any kind of wind; to be perfectly self-regulating; to possess more power, and to be more reliable than any other wind-mill made. Each piece is fitted and numbered, so that a stranger can put the mill up, using our drawings and printed instructions for a guide.



Send for CATALOGUE "A" and Price List.

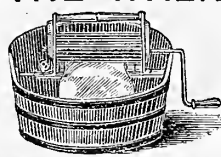
U. S. WIND ENGINE & PUMP CO.,
BATAVIA, ILL.



WIND ENGINES.

for pumping water, grinding grain, irrigating, and general use where economy and regular power is required. Adapted to all kinds of farming and mechanical business. Estimates given and printed instructions furnished. Apply to
S. W. KENNEDY, 516 Fairmount Ave.,
Philadelphia. AGENTS WANTED.

THE WALKER WASHER.



Thousands of Them in Actual Use.
They are a Perfect Success. Simple, Durable, and Cheap.

Agents wanted in every town where they are not already being sold. Retail price \$8. Send for circular. Address

ERIE WASHER CO., Erie, Pa.

WORD MAKING AND WORD TAKING. The best game. Sent by mail for 27 cents, and Dealers supplied by B. M. HAMMETT, 1,384 Broadway, N. Y. C. E. HAMMETT, JR., Newport, R. I.

JANUARY 1st, 1878.

THIRTY-THIRD ANNUAL STATEMENT

OF

THE MUTUAL BENEFIT

LIFE INSURANCE CO.,

NEWARK, N. J.

RECEIPTS DURING 1877.

Premiums.....\$4,508,315 79
Interest.....\$2,012,851 30
Deduct Premium on United States Bonds purchased during the year.. 314,203 76

1,698,647 54

\$6,205,963 33

Balance, January 1st, 1877.....\$31,317,821 48

\$37,524,784 81

ASSETS.

Cash on hand.....\$612,976 48
Real Estate.....294,372 23
United States Bonds, 6 per cents.....par 5,011,500 00
Bonds, City of Brooklyn, N. Y. 63,000 00
" " Newark, N. J. 3,390,000 00
" " Elizabeth, N. J. 550,000 00
" " Rahway, N. J. 97,000 00
" " Utica, N. Y. 145,000 00
" " Springfield, Ill. 89,000 00
" " Orange, N. J. 80,000 00
" " Auburn, N. Y. 150,000 00
" " Jersey City, N. J. 50,000 00
" " Dayton, O. 130,000 00
" " Cleveland, O. 566,500 00
" " New Brunswick, N. J. 14,000 00
" " Erie, Pa. 132,000 00
" " Toledo, O. 173,000 00
" " South Bend, Ind. 61,500 00

NOTE.—MARKET VALUE OF UNITED STATES AND OTHER BONDS, ABOVE PAR, \$1,203,125 75.

LIABILITIES.

Reserve Fund, four per cent (Mass. standard).....\$30,637,999 00
Policy Claims in process of adjustment.....493,151 00
Dividends due and unpaid.....206,207 16
Estimated Expenses on unreported premiums.....21,272 79
Premiums paid in advance.....16,195 95

Surplus as regards Policy-holders, January 1st, 1878.....\$2,414,002 59

Dividends declared on 1877 Premiums, payable in 1878.....1,512,799 96

Unapportioned Surplus, held as Special Guarantee Fund.....901,202 63

Number of Policies in force January 1st, 1878, 42,736. Insuring \$126,193,045 00.

LEWIS C. GROVER, President.

EDWARD A. STRONG, Secretary.
BENJAMIN C. MILLER, Treasurer.

JAMES R. PEARSON, Vice-President.
BLOOMFIELD J. MILLER, Actuary.

L. SPENCER COBLE, -

- - - State Agent,
SOUTHERN NEW JERSEY AND NORTHERN NEW JERSEY, No. 137 BROADWAY, NEW YORK.



MRS. OLD FOGY DOES
NOT USE THE
ROBBINS WASHER.

MRS. COMMON SENSE
DOES.
TAKE YOUR CHOICE.

TO MAKE MONEY SECURE AN AGENCY

FOR THE

CELEBRATED

ROBBINS FAMILY WASHER.

This machine has been ON TRIAL for the past six months in every State and Territory in the Union, and the almost unanimous verdict of housekeepers is this: "Your Washer has proved a complete success." Some of the reasons why this popular verdict has been reached may be found in these facts:

The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

By purchasing a ROBBINS WASHER you can count the hard drudgery of the washboard among the things of the past.

Therefore, we confidently say to every housekeeper in the land, You want a ROBBINS WASHER. You cannot afford to be without one. It will pay to buy one.

THE RETAIL PRICE IS ONLY \$3.50.

Sample to those desiring agencies, \$3.

In bringing the Robbins Washer before the public it becomes necessary to take into brief consideration the

ART OF CLEANSING FABRICS,

which, although so common, is yet imperfectly understood. Having had a lifelong experience in the laundry business—in connection with first-class hotels, public laundries, asylums, hospitals, &c.—we know whereof we speak. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash boilers, &c., have all done very well, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration—all of which are accomplished by the ROBBINS LITTLE WASHER.

WHAT IS IT THAT REMOVES THE DIRT?

You may ask all washerwomen and housekeepers, and your answer from nine out of ten will be: "Plenty of elbow grease," or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No; to do that, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration—all of which are accomplished by the ROBBINS LITTLE WASHER.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in unting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

is embodied all the essential points. First, we have the desired heat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual being all that is required to complete the operation.

The Washer is composed of solid galvanized iron, which will not rust or corrode. There are two sizes—the No. 1, or family size, for ordinary household use; and No. 2, or hotel size, suitable for country hotels, boarding-houses, laundries, &c.

OUR METHOD OF HANDLING.

We want agents everywhere throughout the United States, in every State, county, town, and hamlet. The retail price of No. 1 Washer is \$3.50; of No. 2 Washer, \$5. But we sell sample machines of No. 1 size at \$3; No. 2, or small hotel size, at \$4. Canvassers for this Washer can make more money with it than with anything ever before offered to the public. As, for instance, we established two agencies to test the sale of the Washer upon its merits—one in Naugatuck, Conn., and one in Providence, R. I. The former, Mr. Charles Daniels, in a town of about 2,000 inhabitants, sold by canvassing in two weeks eighty-two Washers. In the latter place Mr. James Roberts, now of Naugatuck, Conn., sold in less than three months, without canvassing or advertising outside the store, over 500 Washers. A thing never before heard of.

TO PERSONS OUT OF EMPLOYMENT

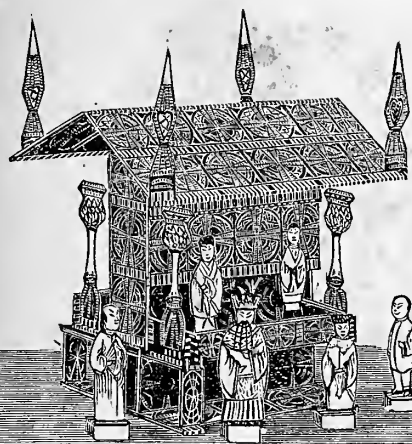
we would say, if you want to secure a paying business, now is your time. Don't wait till the best territory is taken up, but send at once for sample machine and go to work. By following instructions you can sell to nearly every family in your neighborhood. Others have done it, and there is no reason why you should not. Full directions and instructions accompany each machine. Also, special terms to agents, circulars, testimonials, &c.

All orders must be accompanied with cash.

Remit by money order or registered letter to

THE GEO. D. BISELL COMPANY,
Naugatuck, Conn.

Here they Are! — Chinese at Home.



CRANDALL'S CHINESE BLOCKS.

Chin Chin, Wang Ho, Ah Sin,
Chang Si, and all the Rest.

Chinese Men, and Women, and
Young Folks.

Chinese Houses, Palaces, Pagodas,
Gardens, etc., etc.

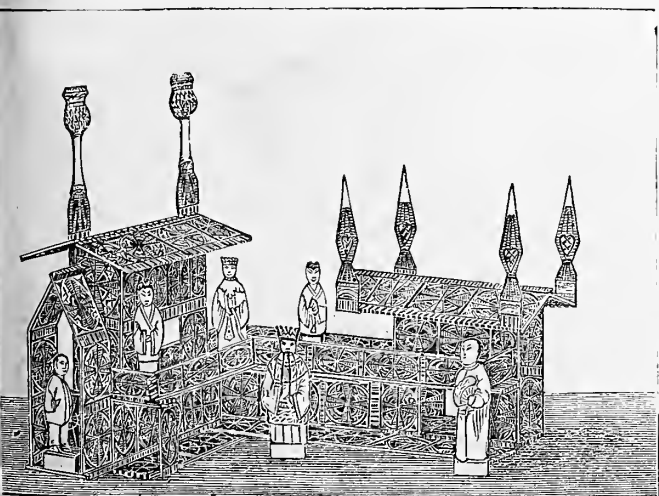
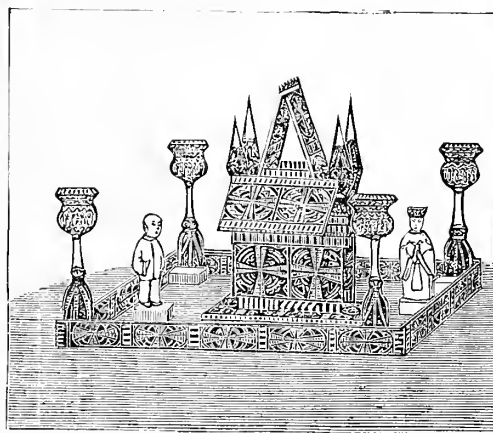
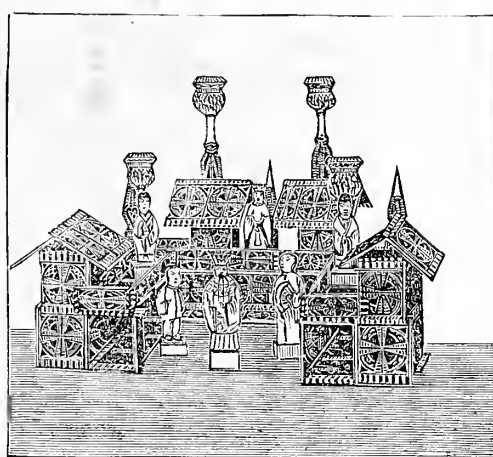
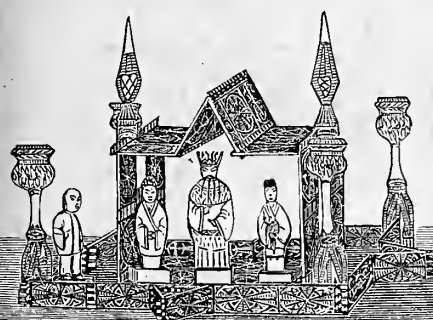
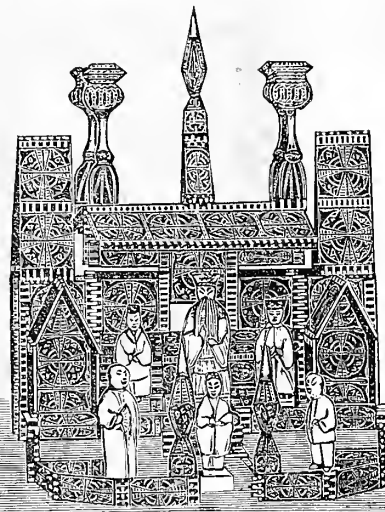
BEAUTIFULLY REPRESENTED.
HIGHLY DECORATED.

The most fascinating Toys for Boys and Girls, delineating scenes from "The Flowery Land," and bringing far-away China right to the Door. Thousands of Structures, all of the Chinese Style, can be made with one Box of these Wonderful Blocks. Only a few of the Designs are given on this Sheet. An ingenious Boy or Girl can multiply them to Thousands. The beautiful variegated colors of the real Blocks themselves can not be shown in the ink prints on this page.

Price of the Chinese Blocks, per Box,
\$1; by Mail, \$1.25.

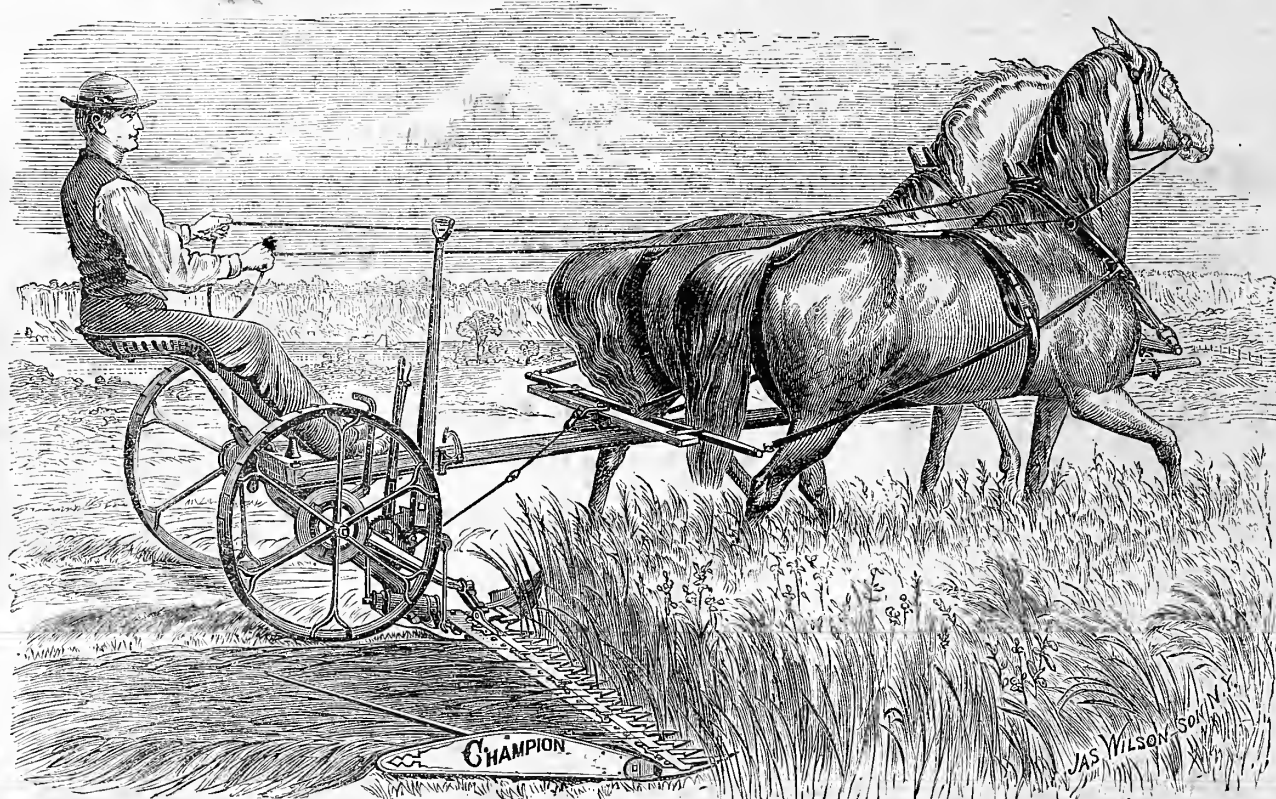
FOR SALE BY

ORANGE JUDD COMPANY,
SOLE GENERAL AGENTS,
243 BROADWAY,
NEW YORK
AND BY TOY DEALERS GENERALLY.



The NEW CHAMPION Mower.

Embodies many New and Valuable Features never before combined in Mowers or Reapers.



This peculiar Machine is unlike any other ever made, and is a new departure in the construction and mode of operating Mowing Machines.

The draft is light; in operation it is *nearly noiseless*; and its adaptation to various kinds of work most extraordinary. The operator has the most **PERFECT CONTROL** of the machine when at work. *The knife will run at any angle, and in any position in which it can be placed.* The machine will work with equal facility over stones, stumps, among trees, on heavy hill-sides, through gullies, over ridges, in swampy marsh and over bog; in the shortest and down grass, whether laying to or from the machine, and in the **TALLEST CROP** to be cut. The machine can be instantly adjusted while in operation to cut low, to take up lodged and very short grass, or to cut over rough ground, wherever it is desirable to cut the crop high; and *both ends of the cutting apparatus may be carried entirely above the ground, at any distance, FROM AN INCH TO ONE FOOT.* The bar may

be lifted to an upright position to pass a tree, remove any lodgment, or to free the guards.

The machine can be **INSTANTLY THROWN OUT OF GEAR** and can be put into working order in a moment's time, and without the operator leaving his seat or stopping the team. **THE WHEELS ARE WIDE APART**, to stride the swath, and leave the grass unmolested. The steady, uniform, and powerful movement of the knife is the crowning feature of success. There are but two small cog-wheels in the machine, and they are about the size of a dinner plate. There is no Pitman and no gearing in the drive-wheels. The gearing is enclosed by one small disk or rim, perfectly protecting it from dirt. One of the great features of this machine is discarding the old style of quick running gearing, and consequently dispensing with the frame work, heretofore employed to carry the gearing.

WELL DESERVED AND CONVINCING TESTIMONY.

THE NEW CHAMPION never received a faint-hearted endorsement. We present a few tersely stated commendations:

"I cut over 100 acres of hay and grain one season, and it did its work perfectly."—J. SHELL, Evans Mills, N. J.

"I value the Noiseless Action, and its reliability in hard-cutting, among its highest qualifications."—J. COGGESHALL, Middletown, R. I.

"It is a powerful cutter, very light draft, durable, and completely under the control of the driver."—TIMOTHY S. FORD, Lowell, Mass.

"It cuts through thick and thin; does not choke."—D. HODGES, Lawn Ridge, Ill.

"The new movement is the longest stride ever taken in Mowing Machine Improvements."—G. L. GOODRICH, Newburyport, Mass.

"It works like a charm. It is the most complete and perfect machine I ever saw."—THOMAS MONTEITH, Monteith, Mich.

"As to easy draft it can not be beat. I used but one horse on a two-horse machine."—S. N. SANDERS, North Sudbury.

"It excels all machines in use at present."—HENRY D. B. FREER, Gardner, N. Y.

"I did not have to throw the machine out of gear, or stop the team to pass a tree."—ALBERT GRAHAM, Johnson's, N. Y.

"I would not exchange it for any other, and its price added."—JOHN B. PALMER, Wilton, Maine.

"It cuts where other mowers failed. I regard it as ahead of all machines I ever saw."—JAMES H. THOMPSON, Bushwell, Ill.

"What puzzles us is to find out what makes it run with so much ease, and where it gets its power."—J. T. & J. A. DRONENBURG, Frederick, Md.

"I have cut among stumps, and over gutters, without injuring the machine in the least."—R. B. WILLIAMS, Hazlettville, Del.

"Farmers, when you try it, you will buy no other."—D. SHOOK, Rhinebeck, N. Y.

"I have used a mower (with this movement) four seasons, and the extent of cash out for repairs has been *sixty-two cents*."—E. F. MAYO, Warwick, Mass.

"The New Champion is equal to any emergency. I have given it a severe test. No lost motion, and no perceptible wear."—MILTON DANCE, Long Green, Md.

"A man will never want but one of these machines, for it will last a life-time."—GEO. W. HARRINGTON, Plainville, Mass.

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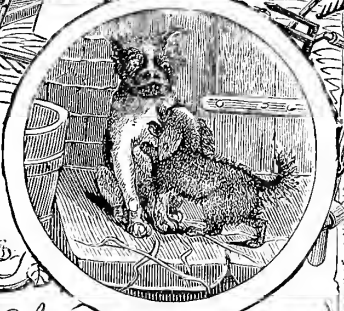
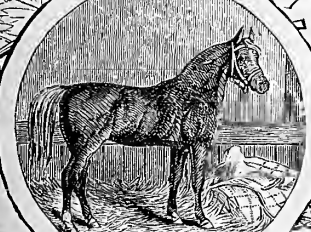
FOR THE FARM, GARDEN & HOUSEHOLD.



VOL. XXXVII.

NUMBER 6.

PUBLISHED BY THE
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Feb. 2, 1877. ALBERT WILLIAMS, Sharon, Pa."

"Your work, 'Gardening for Profit,' is to all other similar works, what Blackstone is to all other law books.

Jan. 16, 1878. JOHN T. CRIST, Independence, Mo."

"I have both your works, 'Gardening for Profit,' and 'Practical Floriculture.' I have been repaid a hundred times for the money they cost.

Sept. 8, 1876. M. E. LEA, Brighton, Maryland."

"'Gardening for Profit,' if valuable to American gardeners, must be indispensable to foreigners, as all know the mistakes likely to be made, which your instructions show so well how to avoid.

Aug. 29, 1876. JOHN MASSEY, Batavia, Ill."

"You have raised up a good many enemies among our old market gardeners, who say you have exposed all the secrets of the trade, in your 'Gardening for Profit,' but you have made a life-long friend of me, for by reading your book, I have made my business, of market gardening, pay, which I never had done before.

Oct. 20, 1877. AARON WILLIS, Newark, N. J."

"In 1870 I purchased your book, 'Gardening for Profit,' and turned about five acres of my farm into vegetables for our market here, and with such success, that the profits from those five acres have been more, annually, than that of my whole farm of 150 acres.

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"Your work, 'Gardening for Pleasure,' contains more plain, practical information than anything I ever read on the subject—and I know of what I speak, having been gardening for 30 years.

Jan. 23, 1877. A. C. LANIER, Madison, Ind."

"Send me your 'Gardening for Pleasure.' I have both of your other works, and would not otherwise replace them.

March 5, 1877. LOUIS SIEGLER, Harrisburg, Pa."

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Dec. 6, 1876. MARIE HOWLAND, Hammon, N. J."

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Jan. 28, 1877. WILLIAM T. HARDING, Florist, Columbus, Ohio."

"'Gardening for Pleasure,' by the author who has already done so much to instruct us of how to make pleasant our country homes, is certain to receive a warm welcome; no subject seems to have been overlooked.

Jan. 8, 1877. HENRY C. BAKER, Wilmington, Del."

"I have read with great interest your very well written book, 'Gardening for Pleasure.' It is full of condensed information, both for the amateur and even the more ex-

perienced in gardening, and I have no doubt it will give pleasure to thousands, as it has done to me.

Dec. 3, 1876. JAMES HENDRICKS, Albany, N. Y."

"I am just in receipt of your 'Gardening for Pleasure,' and if it prove half as interesting to me as your other works, it will be something I cannot well do without.

Nov. 24, 1875. PHILIP HENRY BROWN, Portland, Me."

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"Being a novice, I depended altogether on your book, 'Practical Floriculture,' which I have taken solely as my text book, and my success has surprised me.

Jan. 11, 1878. JOHN C. BONDE, Lexington, Va."

"I have run my greenhouses mainly by the instructions in your book 'Practical Floriculture,' and so far with great success.

April 10, 1877. WILLIAM A. BEERS, Fairfield, Conn."

"I have to thank your 'Practical Floriculture,' which has been the means of enabling me to engage in a business which I trust before long will become as profitable as it is pleasant. I have 2 large greenhouses now stocked with fine plants, entirely propagated and grown according to your directions, which, when disposed of at even moderate prices, I think will pay.

Mar. 15, '76. BENJAMIN C. LODER, Cleveland, O."

"The system of propagating plants, described in your 'Practical Floriculture,' I have followed to the letter, and I doubt if even your own success has been any better than mine.

Jan. 6, 1878. L. C. JOUN, St. Paul, Minn."

"With the instructions received from your works, 'Gardening for Profit,' and 'Practical Floriculture,' I am doing a little both in vegetables and flowers. In both I have been successful, but particularly in flowers.

June 8, 1877. L. C. BARDWELL, Boston, Mass."

"I have nearly all works on gardening, both American and foreign, but I find, whenever I am in a quandary, I look into your little work, 'Practical Floriculture.'

July 25, 1876. J. D. GRAHAM, Denver, Colorado."

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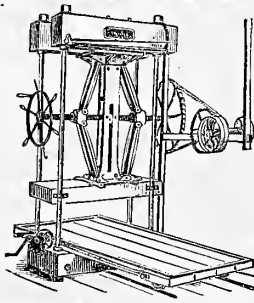
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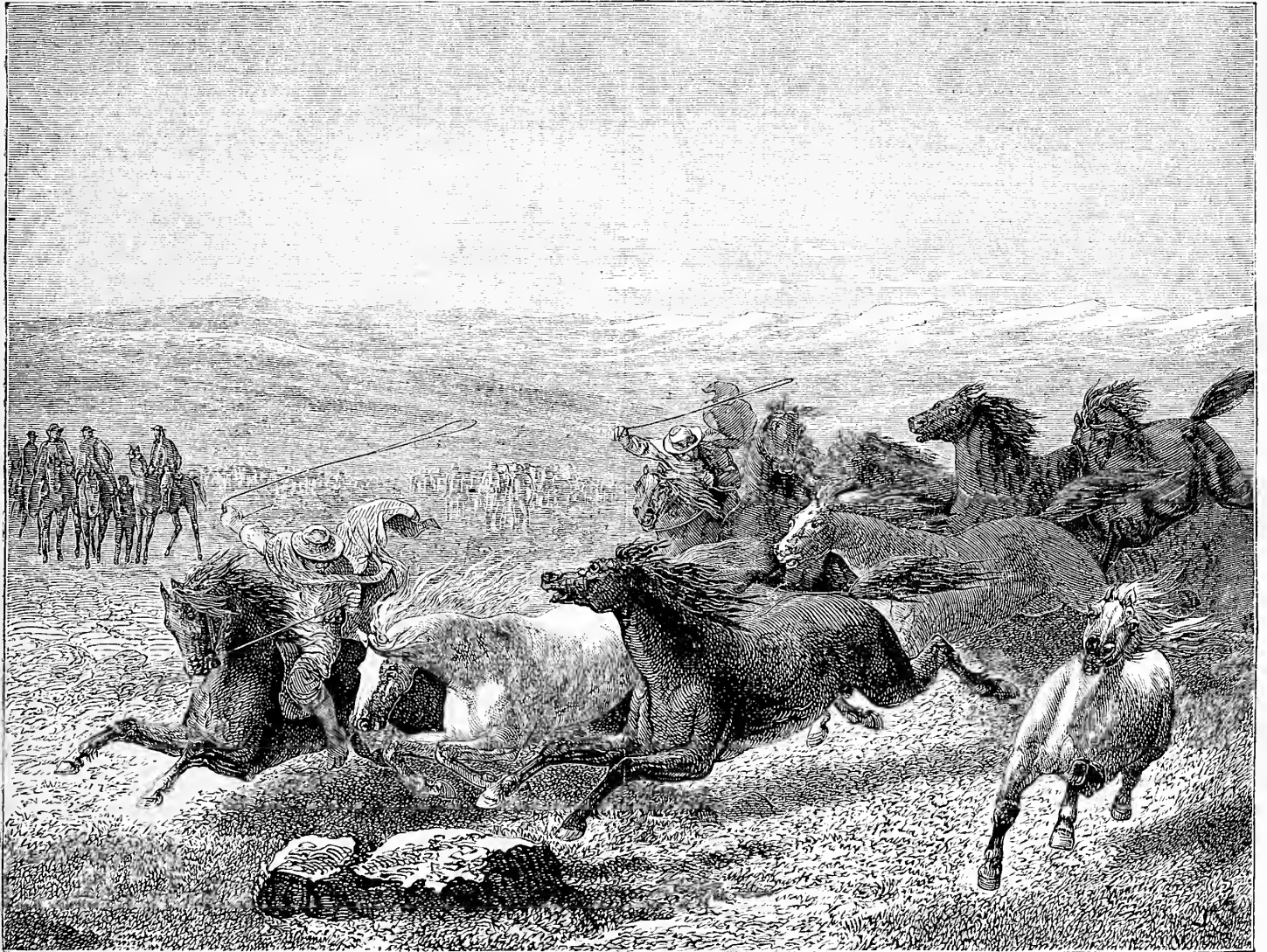
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VOLUME XXXVII.—No. 6.

NEW YORK, JUNE, 1878.

NEW SERIES—No. 377.



CAPTURING WILD HORSES. — Engraved for the American Agriculturist.

It is generally admitted that the wild horses of our far Western plains descended from European stock. The term *Mustang*, applied to the wild horse in both South and North America, is a corruption of the Spanish *mesteño* (from *mesta*, pasture). In Mexico, and the portions of our territory bordering upon that country, the Mustang is still largely employed, though it is being rapidly replaced by better breeds. Large herds of Mustangs are found on the broad plains of the South-west, and their capture is still followed by both Mexicans and Americans. The usual method of capture is by the lasso, though sometimes, in favorable localities, they are taken by driving into an enclosure. The skill with which the Mexican throws the lasso, is often a subject of comment, but many Americans are quite as expert in this very useful accomplishment of the herdsman. In lassoing a wild horse, or other animal, the horse ridden by the hunter plays a most important part. The saddle is of great strength, and secured by girths correspondingly strong. One end of the lasso (usually 30 or 40 feet long), is made fast to the horn of the saddle, and when the rider makes his cast, which is

done at a full gallop, and the noose falls upon the neck of the wild animal, the horse seems to take as much interest in the capture as the rider himself. When it is necessary to check the captive, the well-trained horse braces himself for the tussle, and renders essential aid. The writer traveled for some months in the region of wild horses, and though "sign" of various kinds was frequent, and our interest was greatly heightened by the wonderful stories told of them, not a drove, not even a single *caballo*, could we see, until at last the party concluded the wild horse to be a myth, and it was the subject of many a joke. Early one morning, a few days out from Corpus Christi, Texas, as we reached a crest of one of the great swells of the prairie, there were wild horses at last, and enough to make up for any former deficiency! As far as the eye could reach, were horses in every direction, in groups and droves—hundreds—no doubt thousands were in view at one time—a sight never to be forgotten! When we first saw them they were quietly grazing, but they soon saw us, and we then found that the wild horse was far from a "myth," and the meeting with them was very unlike a

"joke." Perhaps the white covers of our train of a dozen or more 4 and 6-mule wagons attracted their curiosity, at all events they seemed to wish a nearer inspection, and down they came, in squadrons, regiments, and divisions, circling at full speed, nearer and nearer, their ample manes and tails giving an air of surpassing grace. We did not have long to admire the wonderful beauty of this scene. The mules, from their well-known sympathy with horses, became fairly excited, and soon were unmanageable. It was impossible to keep them in line, and though by firing at the wild horses with rifles and pistols, they took alarm and began to make off, the trouble then was that the mules would make off too! Then followed a "circus," compared to which the "Greatest Show on Earth" is a tame affair. Over 50 frantic mules, and a dozen or more equally frantic Texan teamsters, the mules with braying, trying to go in one direction, and the teamsters, with quite the reverse of praying, urging them to go in another, all emphasized by the *staccato* of the drivers' whips, might not be called a "Great Moral Entertainment," but was a very lively one. In the midst of it all, one

team—to our mess wagon at that—got beyond all control, and went on a full jump for several miles after the horses, before fatigue brought it to terms. The droves of wild horses disappeared as strangely as they came, and when the line of march was resumed, all hands were willing to admit that there were wild horses, but that it was not a good plan to hunt them with a train of mule-teams.

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Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun rises.	Sun sets.	Mo'n sets.	Sun rises.	Sun sets.	Mo'n sets.	Sun rises.	Sun sets.	Mo'n sets.
1	S	4:25	7:30	8:40	4:31	7:25	8:33	4:36	7:19	8:27
2	M	4:25	7:31	9:32	4:30	7:25	9:26	4:36	7:20	9:20
3	T	4:24	7:31	10:17	4:30	7:25	10:12	4:35	7:20	10:06
4	W	4:24	7:32	10:53	4:30	7:27	10:43	4:35	7:21	10:44
5	T	4:24	7:33	11:23	4:29	7:27	11:20	4:35	7:23	11:17
6	F	4:23	7:34	11:49	4:29	7:28	11:47	4:35	7:23	11:46
7	S	4:23	7:34	morn	4:29	7:29	morn	4:34	7:23	morn
8	S	4:23	7:35	0:13	4:28	7:29	0:13	4:34	7:23	0:13
9	S	4:23	7:35	0:36	4:28	7:30	0:37	4:34	7:24	0:38
10	M	4:23	7:36	1:0	4:28	7:30	1:3	4:34	7:25	1:6
11	T	4:23	7:37	1:25	4:28	7:31	1:32	4:34	7:25	1:36
12	W	4:23	7:37	2:1	4:28	7:31	2:6	4:34	7:25	2:12
13	T	4:23	7:38	2:41	4:28	7:31	2:48	4:34	7:26	2:55
14	F	4:23	7:38	rises	4:28	7:32	rises	4:34	7:26	rises
15	S	4:23	7:38	3:47	4:28	7:33	3:41	4:34	7:27	3:34
16	S	4:23	7:39	9:29	4:28	7:33	9:24	4:34	7:27	9:18
17	M	4:23	7:39	10:2	4:28	7:33	9:53	4:34	7:27	9:53
18	T	4:23	7:39	10:29	4:28	7:34	10:25	4:34	7:28	10:22
19	W	4:23	7:40	10:51	4:28	7:34	10:49	4:34	7:28	10:46
20	T	4:23	7:40	11:11	4:28	7:34	11:10	4:34	7:28	11:9
21	F	4:23	7:40	11:29	4:29	7:35	11:30	4:35	7:29	11:30
22	S	4:23	7:40	11:48	4:29	7:35	11:50	4:35	7:29	11:51
23	S	4:23	7:41	morn	4:29	7:35	morn	4:35	7:29	morn
24	M	4:23	7:41	0:8	4:29	7:35	0:10	4:35	7:29	0:13
25	T	4:24	7:41	0:30	4:30	7:35	0:33	4:37	7:29	0:33
26	W	4:24	7:41	0:57	4:31	7:35	1:2	4:37	7:29	1:7
27	T	4:24	7:41	1:30	4:31	7:35	1:36	4:37	7:29	1:43
28	F	4:24	7:41	2:12	4:31	7:35	2:19	4:37	7:29	2:26
29	S	4:24	7:41	3:5	4:31	7:35	3:13	4:37	7:29	3:20
30	S	4:24	7:41	sets	4:31	7:35	sets	4:37	7:29	sets

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AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1878.

Hints for Work.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.]

Corn.—The present season is, in the country generally, probably the earliest on record. Much corn was planted earlier than usual, and it is necessary to give extra attention to cultivation. Weeds grow rapidly in such a wet season as this, and should be kept down by frequent working. The forward season may cause growth of stalk at the expense of the ear. As a remedy remove the suckers from the root. A handful of superphosphate of lime applied about the hill now, will help the earing.

Haying.—There will be little hay cut in July this year, unless it is a second crop. Even at the North much has been cut already, and we must hasten to secure the rest before it is over-ripe. The grass and clover being very succulent, will need careful drying. Curing in the cock will greatly improve the quality.

Curing in the Cock, will require two or three days' time. The grass or clover cut in the forenoon may be raked up before evening and thrown into winrows. These may be left until the afternoon of the next day, when they may be thrown into tall cocks, containing about 300 or 400 lbs., and left one day and night to sweat. In this condition the hay ferments and heats, and the excess of moisture is driven off. This process ripens the hay, and improves it very much. After this curing, and a little airing, there is no danger of the hay heating in the mow or stack. To keep the cocks dry,

Hay Cops will be useful. These are made of a square of heavy sheeting (2 yards), with a strong cord on the edges, and having an eyelet hole at each corner. These are placed over the cocks, and tied down at each corner to pegs driven into the hay. They will turn a steady rain of 24 hours' duration, and keep the hay dry. These were described in an illustrated article in the *American Agriculturist* for June, 1876.

Fodder Crops.—A variety of these is better than any single one. Animals love variety, and a change of food is healthful and increases the appetite. Besides a number of well-tried fodder crops, we have some promising new sorts. Of the old ones, oats

and peas, field corn, the large kinds of sweet corn, millet, Hungarian grass, and various root crops, furnish a large choice. Of the

New Fodder Crops, Pearl millet, Golden millet, Southern Cow-peas, and the large mangels, promise to be worth a trial. The two varieties of millet mentioned have yielded immensely, and as a crop for green or dry fodder, and for cleaning the soil, as well as for plowing under for manure, the Southern Cow-pea has been tried successfully. This pea is to be sown now, as soon as may be.

Roots.—Ruta-bagas and white turnips may be sown this month; of the latter, White Norfolk and "Cow's-horn" can be grown and pulled for fall feed in time to be followed by fall grain.

Waste Places may be utilized by plowing and sowing them to some late crop. Every acre and square rod should be made useful in some way, every farm has spots of this kind that could be made profitable, instead of remaining a nursery of weeds.

Cows are now in full flush of milk. As June butter is chosen for packing for winter use, care should be taken to preserve it from all imperfections. This care will be repaid by the better quality. Pure water, good feed, and clean management of the milk and cream, are needed to make the best butter.

Cellars are made damp by inconsiderate methods of ventilation. When a cellar is ventilated in the middle of the day, in an attempt to make it dry, the opposite effect is produced. The hot air is highly charged with moisture; cellar walls and floor are much cooler than the outside atmosphere, and when air is admitted in the day, moisture is deposited as dew on the floor and walls, to the disappointment of the owner. Cellars should therefore be ventilated at night, and kept closely shut up and dark in the day time, especially in hot weather.

Horses.—Fly-time has come, and unless some precautions are taken to rid the horses of their tormentors, they can not do a full complement of work. We find Buchan's carbohc soap, made into soap-suds with hot water, and sponged over the legs and shoulders, and left to dry on the skin, a very good preventive. Cleanliness and darkness in the stables, will contribute greatly to the comfort of the horses at this season.

Sheep.—The ewes and wethers should be tagged and kept free from filth. Many sheep are lost for want of this precaution, by becoming fly-blown. When the maggots have once gained a hold upon a sheep, there is no help for the poor animal; a horrible death—being literally eaten alive by the maggots—is its fate. This can be easily avoided by care.

Lambs.—Early lambs will now need some extra feed. A "lamb-creep," such as was described in the *American Agriculturist*, for April, 1874, will be found useful in supplying the means for feeding the young animals separately from the older ones. To wean lambs easily, turn them into a field, with a few dry ewes, out of sight of their mothers. The mothers will need close watching, lest their udders suffer from retention of the milk. Copious milkers should be relieved of the milk every morning.

Dipping Sheep and Lambs.—At this season, it will be advisable to dip the lambs at least, if not the sheep as well, to rid them of the hateful ticks. A very safe and effective dip is Buchan's Cresylic Sheep Dip, which not only kills the ticks, but cures and prevents scab, and greatly helps to prevent the fly-maggot above referred to.

Poultry.—Young chicks should be pushed ahead as fast as possible. If possible, a good run should be given them. They will do much good in the garden, if the hens can be kept out. A light netting, for separating chicks, dividing runs, or protecting the garden, will be found useful. Mr. H. H. Stoddard, Editor of the "*Poultry World*," Hartford, Conn., has provided means for supplying this want, and informs us that nets of any length and width can be made to order, at very reasonable prices. Those who have so frequently inquired about this kind of nets, will take notice of this.

To use these Nets, plant a few stakes, and run a wire from one end to the other of the row, at the top, and another at the bottom; then stretch the net, and tie here and there to the wires with twine.

The wires may be tied to the stakes with twine, but should be twisted around the end stakes, and these should be driven very firmly, and braced if necessary; but when put up in this way, there is very little strain upon the wires.

Swine.—A run in the orchard, especially if that is sown to clover, will be very helpful for young pigs. There is a mutual relation between orchards, clover, and pigs. The pigs thrive on the clover, and consume all the fallen and wormy fruit; the clover keeps the soil cool, mellow, and moist; and the trees are all the better for the improvement to the soil and the destruction of the insects.

Potatoes.—The potato-beetle has appeared in full force again. The mild open winter has not diminished its numbers. There is but one effective remedy, Paris green. It may be applied in mixture with water—a tablespoonful to a pailful of water—sprinkled on the vines with a whisk, or mixed with flour or plaster—one part to 30 or 50—and dusted on the vines.

Fence Rows.—It is a good practice to move the fences and plow up the fence rows, whenever fields are laid down to grass. We can then have clean fence rows, and get rid of what are nurseries of weeds and collections of trash. Our practice is to take down the fence, lay the rails conveniently on one side, and plow the land; if there are many roots in the ground, gather these to be burned. When the ground is sown, and all is complete, the fence is put up again. It is a very small job to do this once in five or ten years, compared with the convenience of having clean fence rows, which may be readily mown and made to yield a considerable quantity of hay—enough to pay the cost.

Buckwheat is not a very profitable crop, yet there are times and places when and where it may be convenient. Rough places, worn-out sod land, poor stubbles, and hills, may be made to produce buckwheat where little else can be grown. This crop has a good effect upon rough cloddy land, and mellows and softens the soil. Two to three pecks of seed per acre may be sown late this month, or early next. The "Silver Hull" buckwheat is a valuable improved variety.

Notes on Orchard and Garden Work.

The promise of a most successful season in every branch of horticultural production continued until May 13th with us near New York. In the Western States, a cold snap came earlier, and at that date severe frosts in the Eastern States caused much damage, but as we go to press on the 15th, we are unable to state the extent of the losses, which must be wide-spread and important.

Orchard and Nursery.

If tree planting was hurried—and it often is when other work presses—a little attention now may save young trees that might otherwise perish, and it will be well to go through all

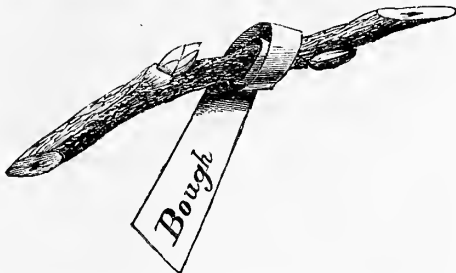
Newly-Planted Orchards, and examine their condition before the drouths come. If a tree has been carelessly planted, it may lean to one side; a fault that merely pressing the soil with the foot will remedy. If a tree is a long while in starting, it needs mulching. We have advised that all trees be mulched at planting, but if this is not practicable for the whole orchard, the backward and unpromising specimens should by all means be so treated. See last month's remarks on mulching.

Labels are very convenient, but they often do much harm. Every tree in an orchard, or indeed elsewhere, should be known by its position, and unless a proper record was made at planting time, let it be done at once. Begin and number the rows, from one side, and then opposite the number of the trees in the row, write the name. A permanent record of this kind should be kept, and a copy for convenient reference may be made in a pocket memorandum book. With this, labels are not needed, and generally may be entirely dispensed with.

Labels from the Nurseries are not intended to be permanent. They are usually wired on carefully, the wire twisted tightly so that it may not come off.

They are only intended as a guide to the purchaser until the tree is planted. Look to each tree, and be sure that no firmly fastened label remains; with a very slight growth, the tree may become injuriously strangled. If one prefers to have his trees labeled, let him make sure that the wire allows abundant room to grow. But

A **Safer Label** has no wire. Cut sheet zinc into elongated triangles, about an inch wide at base, and 4 to 6 inches long. Write on these with a black



ZINC LABEL.

lead pencil, and coil the point around a twig, as shown in the engraving. This makes a very permanent label; we have known it to be as distinct as ever for 25 years, and properly put on, they will not strangle. In putting on labels it is well to

Observe a System.—On every tree put them on the same side, N. S., etc., and at the same height as near as may be, otherwise it will be difficult to find them among the foliage.

Grafts set this spring need to be kept watch of; often but one bud will push, and this send out a long vigorous straight shoot, which in heavy winds will be broken or pulled out. Pinch the tops of such shoots to make them branch. Indeed, treat a graft in a tree, as if it were a young tree planted in the ground. If shoots appear on the stock below the graft, break them off while yet young.

Thinning Fruit is Rarely Overdone.—The question of pay can only be decided by trial. If the market is a good one, and labor cheap, it will no doubt pay. If the fruit is marketed in a wagon body, and shoveled up to measure it, it will not pay.

Shoots from Buds put in last summer are to have the same care as those on grafts. They sometimes grow so vigorously, especially on peach trees, that a stake is needed.

Blight and other troubles that befall trees were mentioned last month, and there is nothing to add. This will be an especially busy month

With Insects.—Aside from those mentioned in former months, the borers generally lay their eggs. The perfect insect of the Peach-borer is a small moth, that lays her eggs just at or below the surface of the ground. Heaping up a low mound of earth, or of coal ashes, around the tree, has been found useful as a preventive. When the grub has entered, gum will be found oozing from the wound; the borer does not go much below the bark, and is easily cut out. The Apple-tree borer is a brown and whitish striped beetle with long feelers; this places its eggs near the base of the tree; sawdust from its boring, is a sign of its presence. Cut out, and use a wire if need be, as soon as discovered. The Codling moth worm leaves the fruit, unless that falls, and crawls around in search of a hiding place wherein to make its changes; cloths or hay bands fastened around the trunks catch large numbers; these traps should be examined every 10 days.

Fruit Garden.

Aside from the insects that attack ordinary orchard trees, some peculiar ones are found here. Currants and gooseberries are attacked by the currant worm. See last month for the use of *White Hellebore* for these, and about the attacks of the white grub on strawberries. Large caterpillars of several kinds, and beetles, will be found on grapevines, but rarely so numerous that hand-picking will not keep them in check. A slug-like caterpillar, green, slow, and slimy, often disfigures pear and cherry leaves. Dusting with slaked lime or dry ashes will soon rid the trees of it.

Currants and Gooseberries.—Much pruning in the

fall may be avoided by removing shoots which push now where stems are not needed; they are easily pulled out. Generally the bushes are too full of wood and leaves for the most abundant fruit. In some markets both these fruits bring a better price when picked green—indeed, gooseberries are rarely sold otherwise. By heavy mulching, the fruit of the currant may be kept on the bushes a long while in good condition for table use. For jelly, currants should be gathered as soon as fairly colored.

Raspberries.—The wood, or canes, that fruit this year, will die the next, and the green shoots that are now growing, will bear next year's fruit. If more of these new shoots than are wanted start up, select three or four of the best to each stool, and treat the others like weeds. When the shoots for next year reach 3, or at the most 4 feet, stop them by pinching off the ends. The "Cap" varieties do not sucker, at a distance from the plant, but shoot up from around the base. Keep the new shoots shortened to make a neat bush 2½ or 3 feet high. Thus treated, they will need no stakes. We prefer to cut out the old canes as soon as picking is over.

Blackberries have the same manner of growth as raspberries, and shoots must be treated for next year's fruit. When they reach 5 or 6 feet, nip out the top, which will cause them to branch. Most of them are great wanderers, and all that come up where not wanted should be pulled up or cut off.

Grape Vines.—Sufficient is said about the management of the young vine, especially, on page 222. In moist hot days, examine often for mildew, and on its first appearance dust sulphur freely.

Strawberries.—The treatment of the plants after fruiting will depend upon the plan of cultivation. In any case, the mulch should be removed, the soil between the rows forked over, and the weeds that have come up among the plants pulled up. Where the plants are kept in hills or single rows, the runners are to be cut off. In the alternate plan, the runners are allowed to take root in the spaces between the rows, and the old plants removed, later in the season, after the new ones are well established. New beds may be set from plants struck in pots, as soon as they are well rooted.

Kitchen and Market Garden.

The value of the rake as a weeding implement has often been referred to in these Notes, and at no time is its utility more manifest than now, when the hot weather brings the later weeds on in great profusion. With a long-toothed, wide rake, the surface can be stirred very rapidly, and this will so disturb the germinating weeds that the sun will soon finish them. The frequent use of the rake will save much hoeing. Last month's Notes will be timely in many localities for the present month.

Sowing for Succession must be kept in mind, as the season of many vegetables may be greatly prolonged. Bush Beans, Sweet Corn, etc., by sowing every ten days or two weeks, may be had until frost.

Asparagus should not be exhausted by too long continued cutting. The usual rule is to stop as soon as early peas are ready. Recent inquiries show that it is not generally understood that the crop of next year depends upon the growth of the tops this season, as we have been asked by several if they should not be kept cut off. This would completely destroy the bed. The growth of the foliage is of the greatest importance, as it provides for the buds for next season. Allow the tops to grow until the change of color shows that they have done their work; all weeds that appear should be pulled.

Beans.—If cold storms have injured the first planting of Limas, put in more seed at once. These usually need to be aided in taking to the poles at first. Bush sorts may be put in for succession.

Beets and Carrots.—Sow the main crop if not already in. Weed, and thin when large enough.

Cabbages and Cauliflowers are greatly helped by frequent hoeing. As soon as the early crops are off prepare the ground for celery and other late crops. The seed-beds of late cabbages should be kept free of weeds, and if slugs or insects attack them sprinkle with ashes or lime.

Cucumbers.—The main crop for pickles is usually

sown from the middle of this month to the first of next. For this purpose many prefer drills to hills. Furrows are made 5 to 7 feet apart, well manured, the manure covered with soil, and 12 to 20 seeds sown to the foot to allow an abundance for insects, covering an inch deep. If in hills, make them 6 or 8 feet apart each way, and drop about 20 seeds in each. As soon as the plants appear dust with ashes or air-slaked lime. When the vines begin to run, thin to three in a hill, or a foot apart if in rows.

Egg-Plants should not be put out until the weather is settled warm. They need abundant manuring and constant care to keep them from destruction by the potato-bug.

Melons.—Plant and treat as directed for cucumbers.

Onions require frequent weeding. Our most successful cultivators find a dressing of salt, at the rate of 3 or 4 bushels to the acre, applied when the plants are 4 or 5 inches high, of benefit. For a near market, half-grown onions, in bunches of 12 to 6, according to size, are more profitable than ripe ones.

Parsnips and Salsify are generally left too close in the rows; 5 inches for the one and 4 for the other will give much finer roots than if left nearer. Hoe until the leaves meet across the rows.

Peas.—Sow for succession, though in our hot summers they seldom amount to much.

Rhubarb.—Keep the flower stalks cut off.

Spinach.—The common sort runs up to seed in hot weather; the New Zealand Spinach, a very different plant, flourishes best in hot weather. The seed is uncertain; sow a plenty in warm rich soil, and thin or transplant to 3 feet apart. Beets make an excellent substitute for spinach, pulled before the root is thicker than a quill. The Spinach Beet, and Swiss Chard, are also useful.

Squashes.—The winter sorts should be planted as directed last month.

Sweet Potatoes.—Around New York, the early part of this month is soon enough. See May Notes.

Tomatoes in garden culture should always have some kind of support. Single plants may be neatly trained by a trellis made with three barrel hoops and three stakes. We have given numerous forms of supports in former volumes. The pea trellis given on p. 133, last month, is used, by the gentleman who proposed it, for tomatoes also. Whatever support is used, it should be in place early, as when the plants become large enough to fall over they are very unmanageable.

Sweet Herbs should be transplanted from the seed beds, from time to time, to fill vacant places.

Turnips of the Ruta-baga sorts may be sown at the last of the month or early next. The "Long French" is best for family use, though not large.

Odors and Ends.—Insects must always be attended to. The large green "worm" will make quick work with a tomato vine—hand pick it, for it neither bites nor stings; ditto squash bugs.... Slaked-lime, or ashes, or both, should be freely dusted on all young plants of the squash and turnip families.... See Note last month on "Weeds and Weeder.".... If watering is to be done, do it thoroughly. A mere sprinkling is of little use.... Sashes no longer needed for hot-beds or frames should be carefully put away under cover—Straw mats are to be put away, when dry, in a dry place.

Flower Garden and Lawn.

In most localities planting is done, and there is but little on that subject to add to last month's Notes. Now comes the caring for that which has been planted, and many a novice will find that he has provided a difficult task for himself, and if he does the work himself, will determine to have another year more lawn and fewer beds. A small place well kept is vastly more satisfactory than a large one partially neglected. If one has a suitable locality, he should consider

A **Wild Garden**, which is now becoming popular in Europe, in which hardy plants can grow without any other care than to prevent the strong crowding out the weak. Of course a garden of this kind should not be in a conspicuous place. The surroundings of the house, whether limited or

extensive, should always show careful keeping.

And most important to this end is the care of

The Lawn and Paths.—The frequent use of the lawn-mower, persistent uprooting of perennial weeds, and the clean cutting of the margins, whether they border paths or beds, are all essential to the neatness of the grounds. Weeds must be kept from the paths, as well as the beds and borders, and the roller used when needed.

Bedding, if undertaken in ornamental designs, entails much care in keeping the beds in proper condition. The plants must be kept at a proper height by frequent pinching, and as they become crowded the lines between the kinds must be kept clear and distinct by cutting away those that tend to run together and destroy the effect.

Roses, unless attended to in time, soon present a sorry sight; on the first appearance of the "slug," so-called, the little green caterpillar found on the underside of the leaves, very inconspicuous in itself, but soon sadly noticeable for its work, apply "white hellebore," as directed for currants and gooseberries, under "Fruit Garden." This should be repeated every few days, as long as required. Then the Rose-bugs follow, for which hand-picking is the only remedy, and this is best done when they are quiet, in early morning. Take a tin cup with a little water in it, on which a few drops of kerosene are floating, and knock the bugs off into this. When flowering is over, cut away the clusters.

Fuchsias rarely do well in the open ground unless in a shaded place. They are best on the veranda.

Tuberoses should only be set out when the weather is settled warm, and have a rich spot.

Spring Bulbs, Hyacinths, Tulips, etc., should be kept growing until the leaves begin to fade; then take them up and spread under cover until the leaves are quite dry, when these are to be removed and the bulbs stored in a cool dry place until fall.

Annuals.—Sow for succession, and set out the tender kinds started under glass.

Sundry Matters.—Cut away the clusters from perennials and shrubs as soon as the flowers fade, unless seeds are wanted... Dahlias depend largely upon sticks and strings, are easily broken by storms, and need frequent care.... Stakes will be needed by gladioluses, tuberoses, and other plants. They should be as inconspicuous as possible; if painted stakes are used, let them be brown or some neutral tint rather than green.... If seeds are saved, select from the best always.... Weeds and insects are to be constantly looked for and disposed of.

Greenhouse and Window Plants.

There is but little to add to last month's Notes. As the heat increases, more care in watering will be required by the plants set out, as well as those left in the house. Increase the shading if needed.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 13th, 1878, and for the corresponding period last year:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
26 d's last m'th	323,000	3,417,000	2,109,000	396,000	405,000	581,000			
27 d's last m'th	417,000	3,102,000	1,413,000	293,000	387,000	496,000			
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
26 d's last m'th	407,000	4,376,000	2,531,000	423,000	371,000	835,000			
27 d's last m'th	326,000	3,491,000	3,105,000	412,000	563,000	619,000			
Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
26 days 1878.	323,000	3,417,000	2,109,000	396,000	405,000	581,000			
27 days 1877.	237,100	2,544,000	1,570,000	51,000	198,000	573,000			
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
26 days 1878.	407,000	4,376,000	2,531,000	423,000	371,000	835,000			
27 days 1877.	319,000	3,072,000	2,119,000	62,000	93,000	1,570,000			
Exports from New York, Jan. 1, to May 9.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.	
1878.	904,902	14,932,098	6,690,781	1,340,395	1,335,400	223,827	212,106		
1877.	456,697	8,134,698	7,092,326	439,605	123,083	60,141	156,871		
1876.	738,579	7,611,910	1,336,530	102,604		75,290	319,539		

Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Peas.	Beans.	Butter.	
May 7, 1878.	748,196	203,020	72,229	207,576	570,995	238,227			
Apr. 15, 1878.	1,370,081	541,648	106,375	396,861	857,273	253,424			
Mar. 11, 1878.	1,639,874	470,481	114,260	60,145	1,090,897	275,705			
Feb. 11, 1878.	1,474,055	771,470	208,816	831,673	1,415,633	318,079			
Jan. 10, 1878.	2,386,715	1,059,909	286,333	913,988	1,687,985	321,474			
Dec. 10, 1877.	2,341,982	1,723,229	399,077	851,787	1,479,052	358,849			
Nov. 5, 1877.	2,814,771	2,643,502	169,919	368,429	1,770,759	328,388			
May 7, 1877.	1,601,666	4,688,809	195,016	174,375	317,841	291,654			
Feb. 7, 1877.	3,601,819	2,302,261	374,119	671,114	956,111	383,605			
Jan. 8, 1877.	3,666,010	3,077,504	344,750	905,615	1,088,104	425,406			
Dec. 11, 1876.	3,110,233	3,385,534	219,811	873,310	1,182,392	512,041			
Apr. 10, 1876.	2,393,074	2,372,110	68,429	200,381	706,282	456,942			
Jan. 10, 1876.	5,302,293	623,982	100,711	325,191	1,650,360	307,433			

CURRENT WHOLESALE PRICES.

	Apr. 17.	May 13.
PRICE OF GOLD.	100 3-8	100 1-2
Flour—Super to Extra State	\$4 15 @ 5 00	\$4 10 @ 4 60
Super to Extra Southern	4 25 @ 4 75	4 10 @ 4 75
Extra Western	4 90 @ 4 90	4 60 @ 4 80
Extra Genesee	5 00 @ 6 25	4 75 @ 6 00
Superline Western	4 15 @ 4 90	4 10 @ 4 60
RYE—Flour, Superline	3 10 @ 4 15	3 90 @ 4 30
CORN—Yellow	2 25 @ 3 10	2 25 @ 3 10
WHEAT—All kinds of White	1 35 @ 1 46	1 35 @ 1 46
All kinds of Red and Amber	1 00 @ 1 10	1 00 @ 1 38
CORN—Yellow	52 @ 57	50 @ 56
Mixed	45 @ 53	48 @ 56
White	50 @ 57	50 @ 57
OATS—Western	32 @ 40	32 1/2 @ 40
State	33 @ 40	33 @ 41
RYE	67 @ 75	70 @ 75
BARLEY—Malting	49 @ 50	46 1/2 @ 48
HAY—Bale, 100 lbs.	40 @ 85	40 @ 85
STRAW, 100 lbs.	35 @ 65	35 @ 65
COTTON—Middlings, 40 lb.	10 1/2 @ 10 1/2	10 1/2 @ 10 1/2
HOPS—Crop of 1877, 40 lb.	5 @ 10	5 @ 10
old, 40 lb.	3 @ 3	3 @ 3
FEATHERS—Live Geese, 40 lb.	35 @ 47 1/2	35 @ 47 1/2
SEED—Clover, West. & S. 100 lb.	7 @ 7 1/2	7 1/4 @ 7 1/2
Timothy, 40 bushel	1 25 @ 1 40	1 25 @ 1 37 1/2
Flax, 40 bushel	1 45 @ 1 50	1 40 @ 1 60
SUGAR—Refined & Grocery, 40 lb.	6 1/2 @ 8 1/2	6 @ 8 1/2
MOLASSES, Cuba, 40 gal.	26 @ 38	22 @ 36
New Orleans, 40 gal.	30 @ 52	23 @ 50
COFFEE—Rio (Gold), 40 lb.	13 1/2 @ 17	14 1/2 @ 17 1/2
TOBACCO, Kentucky, 40 lb.	2 1/2 @ 4	2 1/2 @ 4
Seed Lent, 40 lb.	4 @ 50	4 @ 50
Wool—Domestic, 40 lb.	25 @ 48	23 @ 46
Domestic, pulled, 40 lb.	20 @ 36	18 @ 35
California, spring clip, 40 lb.	13 @ 28	12 @ 27
California, fall clip, 40 lb.	10 @ 19	10 @ 19
TALLOW, 40 lb.	7 1/2 @ 7 1/2	7 1/2 @ 7 1/2
OIL—Coke, 40 lb.	30 00 @ 31 50	30 00 @ 31 00
PORK—Mess, 40 barrel	9 75 @ 10 25	9 30 @ 9 75
Extra Prime, 40 barrel	8 50 @ 8 75	8 50 @ 8 50
BEEF—Extra mess, 40 lb.	12 00 @ 12 25	12 00 @ 12 25
LARD—In tubs, 40 lb.	6 00 @ 6 25	6 00 @ 6 25
BUTTER—State, 40 lb.	10 @ 35	10 @ 35
Western, poor to fancy, 40 lb.	8 @ 36	7 @ 33
CHEESE	5 @ 13 1/4	4 @ 11 1/2
EGGS—Fresh, 40 dozen	9 @ 11	10 1/2 @ 13 1/2
POULTRY—Fowls, 40 lb.	8 @ 13	9 @ 15
Chickens, 40 lb.	20 @ 50	20 @ 28
Turkeys, 40 lb.	8 @ 16	50 @ 17
Geese, 40 lb.	1 12 1/2 @ 2 00	75 @ 1 50
Ducks, 40 lb.	60 @ 1 12	60 @ 1 12
Roosters, 40 lb.	12 @ 20	— @ —
Capons, 40 lb.	5 @ —	6 @ 8
APPLES—40 barrel	2 50 @ 4 50	2 75 @ 6 00
PEANUTS, domestic, 40 bush.	85 @ 1 40	85 @ 1 40
STRAWBERRIES, 40 quart.	20 @ 30	20 @ 30
CRANBERRIES, 40 bbl.	6 00 @ 8 00	6 00 @ 9 00
ORANGES, Florida, 40 bbl.	4 00 @ 7 00	— @ —
RADISHES, new, 40 100 bu.	50 @ 1 25	50 @ 1 25
PEAS—Canada, in bond, 40 bu	83 @ 84	82 @ 83
green, 40 bush.	1 12 1/2 @ —	1 05 @ 1 10
new So., 40 crate.	1 25 @ 2 25	50 @ 75
40 bbl.	5 00 @ 6 00	4 00 @ 5 00
POTATOES, new, 40 bbl.	1 50 @ 1 75	3 00 @ 7 00
POTATOES—old, 40 bbl.	1 00 @ 1 50	1 00 @ 1 50
SWEET POTATOES—new, 40 cte	— @ —	1 00 @ 1 25
BEETS, 40 bbl.	60 @ 75	— @ —
Bernuda, 40 crate.	75 @ 1 50	1 00 @ 1 25
TURNIPS, 40 bbl.	25 @ 50	25 @ 62 1/2
white, 40 100 bunches.	— @ —	1 50 @ 2 00
BEANS—40 bushel	1 25 @ 2 35	1 50 @ 2 00
BROOM-CORN	— @ —	4 @ 7 1/2
SPINACH, 40 bush.	1 00 @ 2 50	50 @ 75
KALE, 40 bbl.	75 @ 1 00	35 @ 60
TOMATOES, 40 box.	75 @ 1 00	50 @ 80
CABBAGES—40 100	— @ —	5 00 @ 10 00
new, 40 bbl.	— @ —	50 @ 1 75
ONIONS—40 bbl.	75 @ 1 75	1 25 @ 3 50
40 crate.	2 00 @ 6 00	— @ —
CARROTS, 40 bbl.	50 @ 75	— @ —
RHUBARB, 40 100 bunches.	— @ —	75 @ 2 00
ASPARAGUS, new, 40 doz. bun	3 50 @ 5 50	75 @ 1 50
LETTUCE, 40 bbl.	2 00 @ 3 00	1 50 @ 2 50
SQUASH, 40 bbl.	2 00 @ 2 50	1 25 @ 1 75
STRING BEANS, 40 crate.	— @ —	1 50 @ 2 00
WATERCRESS, 40 bbl.	— @ —	2 00 @ 3 00
CUCUMBERS, 40 crate.	— @ —	2 00 @ 4 75

Gold has been up to 100%, and down to 100%, closing May 13, at 100 1/2, as against 100 1/4 on April 17th; 102 1/2 on January 12; 103 on December 12; 102 1/2 on November 12; 103 on October 12; 105 1/2 on July 12; 104 1/2 on June 12; 107 1/2 May 12, of last year.... Breadstuffs have been quite freely dealt in, during the month, largely on export and speculative account, but at variable prices, closing, generally, with more firmness. The export movement in No. 2 Chicago (mixed) Oats has been on a liberal scale, mainly for France and Belgium. The opening of the Canals, and the general resumption of inland navigation have served to augment the available supplies of Flour and Grain, especially the latter, and with the very favorable crops and weather reports, have tended to depress prices. In the line of Provisions, business has been less active, and on the basis of reduced figures, in most instances. Hog products have been pressed for sale, with more than usual eagerness. Butter and Cheese have declined materially, and close weak.... A very moderate demand has been noted for Hops, Seed, and Tobacco, within the previous range.... Cotton has been rather more sought after, closing stronger.... Wool has been offered freely, and quoted lower, without stimulating operations, which have been on a moderate scale.... Hay and Straw steady, but not active.... Ocean freights have shown more animation, but at irregular rates, leaving off more steadily.... Grain rates by steam to Liverpool closed May 13th at 8d. (about 16 cents) per bushel; Glasgow, 8 1/2 @ 9d.; London, 7 1/2 @ 8d.; Bristol, 9d.; Hull, 8 1/2 d.; the Continent, 7 @ 9d.; by rail to Liverpool, 7 @ 7 1/2 d.; London, 7 @ 7 1/2 d. 40 bush. Flour to Liverpool, by steam, 2s. 9d. @ 3s. (about 66 cents @ bbl.); by rail at 2s. @ 2s. 1 1/2 d.; London, 2s. @ 2s. 1 1/2 d., and by steam, 2s. 6d. @ 2s. 9d.; Bristol, by steam, 3s. @ 3s. 3d., and by rail, 2s. 4 1/2 d. per bbl. Provisions by steam to Liverpool,

32s. 6d. @ 40s. per ton. Cotton by sail $\frac{1}{4}$ d., and steam $\frac{1}{4}$ d. $\frac{1}{2}$ d. Grain, by sail, for Cork and orders, at 6s. @ 6s. 1 $\frac{1}{2}$ d. per quarter, (8 bushels), and to Continental ports, 5s. 4 $\frac{1}{2}$ d. @ 6s. 6d.; Italian ports, 5s. 6d. @ 6s.; and from Phila. for Cork and orders, 6s. @ 6s. 3d., and from Balt. for Cork and orders, 6s. @ 6s. 3d., and from Phila. for Lisbon, by sail, in bags, 15 @ 15 $\frac{1}{2}$ cts. per bushel.

New York Live-Stock Markets.

WEEK ENDING	RECEIPTS.				
	Beeves.	Cows.	Calves.	Sheep.	Swine.
Apr. 22.....	9,319	89	3,635	20,100	30,517
Apr. 29.....	10,258	25	3,988	19,881	29,931
May 6.....	10,763	34	4,379	24,381	32,966
May 13.....	11,379	57	4,177	21,470	27,355
Total for 4 Weeks.....	41,754	205	16,729	86,232	121,369
do. for prev. 5 Weeks.....	50,271	390	8,833	97,384	148,724

Average per Week..... 10,433 51 4,182 21,570 30,442

do. do. last Month..... 10,055 78 17,665 19,590 29,715

do. do. prev. Month..... 9,060 132 903 21,679 34,913

Beeves.—Business has been marked by a gradual improvement, both in the demand and in the prices; a gain of one cent a pound having been made on the whole, notwithstanding the continued increase in receipts. The quality of the stock offered has also been better than usual; some Colorado steers brought 10c. $\frac{1}{2}$ lb. for 56 lbs $\frac{1}{2}$ cwt., and some Texans 9 $\frac{1}{2}$ c. The Texan drive this summer will be both larger and better than usual, estimates being made of 300,000 head, and the early grass having brought the stock into fine condition. At the close, prices were firm at the advance; a few extra good cattle, 55 lbs. to the cwt., sold for 11 $\frac{1}{2}$ c.; Prime steers, 57 lbs. to the cwt., 10 $\frac{1}{2}$ @11c., and fair natives and good Texans, 56 lbs. to the cwt., brought 9 $\frac{1}{2}$ @10 $\frac{1}{2}$ c. $\frac{1}{2}$ lb. The foreign shipments reached over 1,000 head per week.

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Apr. 22.....	3 @ 11 c.	8 $\frac{1}{2}$ @ 9 $\frac{1}{2}$ c.	9 c.
Apr. 29.....	8 $\frac{1}{2}$ @ 11 c.	8 $\frac{1}{2}$ @ 10 c.	9 $\frac{1}{2}$ c.
May 6.....	8 $\frac{1}{2}$ @ 11 c.	9 $\frac{1}{2}$ @ 10 c.	9 $\frac{1}{2}$ c.
May 13.....	8 @ 11 $\frac{1}{2}$ c.	9 $\frac{1}{2}$ @ 10 $\frac{1}{2}$ c.	10 c.

Cows have been dull and slow of sale, no good offer being refused. Prices of common cows are \$30 @ \$40, and of good ones \$50 @ \$65 per head; some very good animals were sold at the last price.... **Calves.**—The market, after being weak for the best part of the month, improved along with beef, and became strong and higher. Best N. Y. State veals sold for 6 $\frac{1}{2}$ @7c., and the poorest buttermilk calves brought 4c. $\frac{1}{2}$ lb.... **Sheep and Lambs.**—A marked improvement has occurred in this class of stock generally. Good sheep have been in good demand, unshorn sheep ranged from 6 to 6 $\frac{1}{2}$ c. $\frac{1}{2}$ lb., and clipped brought 4 $\frac{1}{2}$ @6c. $\frac{1}{2}$ lb. Lambs have been lower than ever before known; 6 $\frac{1}{2}$ c. $\frac{1}{2}$ lb. for Ohio; 8@8 $\frac{1}{2}$ c. for Virginia, and 8c. for N. Y. State, having been the rates at the close. As low as \$1.75 to \$1 per head was paid for many.... **Swine.**—With pork down to \$9 per bbl.—lower than for 30 years—hogs have done well at 3 $\frac{1}{2}$ c. $\frac{1}{2}$ lb. for live; dressed have fallen during the month, and closed at 4 $\frac{1}{2}$ c. $\frac{1}{2}$ lb. Pigs brought 4 $\frac{1}{2}$ @5c. $\frac{1}{2}$ lb.

Prices of Feed.

Bran, per ton.....	\$18.00 @ \$20.00
Middlings, per ton.....	19.00 @ 21.00
Ground Feed, per ton.....	15.00 @ 21.00
Linseed-oil-cake, western, per ton.....	41.00 @ 47.00
Cotton-seed-cake, per ton.....	25.50 @ 40.00
Chandler's Scraps, per lb.....	3 @ 4

Prices of Fertilizers.

No. 1 Peruv. Guano 10 p. ct. ammonia, standard, $\frac{1}{2}$ ton.....	\$56.50
do. do. Lobos, do. do. do.....	47.50
do. do. guaranteed, $\frac{1}{2}$ ton, cargo F.....	56.00
do. do. rectified, per ton, 97.0 p. c.....	69.00
do. do. do. do. do. 3.40 p. c.....	51.00
Soluble Pacific Guano, $\frac{1}{2}$ ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone.....	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs.....	26.14
do. Spring Wheat Manure, $\frac{1}{2}$ 1,000 lbs.....	25.00
do. Fruit and Vine Manure, do.....	17.50
do. Bone, strictly pure, meal.....	42.00
do. do. do. extra fine.....	40.00
do. do. do. fine.....	38.00
do. do. do. medium.....	36.00
do. do. Lawn Top Dressing.....	60.00
do. do. Potato Manure, (Ville formula).....	51.94
Stockbridge Corn Manure, per acre.....	20.00
do. do. do. do. do. do.....	10.00
do. do. do. do. do. do.....	50.00
do. do. do. do. do. do.....	10.00
do. do. do. do. do. do.....	15.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Gypsum, Nova Scotia, ground, per ton.....	8.00
Nitrate of Potash (95 per cent.), per lb.....	9 $\frac{1}{2}$ c.
Sulphate of Potash (actual potash 44 per cent) per lb.....	4 c.
do. do. (actual potash 27 $\frac{1}{2}$ per cent) per lb.....	2 c.
Greenland Potash (actual potash 12 to 15 p. c. p. ton).....	\$18.00
Nitrate of Potash (actual potash 50 per cent), per lb.....	3 $\frac{1}{2}$ c.
Nitrate of Soda, per lb.....	4 $\frac{1}{2}$ c.
Sulphate of Ammonia (25 per cent), per lb.....	4 $\frac{1}{2}$ c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton.....	\$55

Conn. Agr. Experiment Station—

Bulletin No. 11.—May 11, 1878—Analyses: No. 118—Nitrate of Soda, guaranteed 95 to 96 per cent. by H. J. Baker & Co., N. Y. City. Sampled by W. S. Baldwin, Naugatuck, Conn.—Moist condition.

No. 120—Peruvian Guano, from Chapman & Van Wyck, N. Y. City; sampler J. N. Bishop, Plainville, Ct.

No. 121—Pulverized Bone.—Refuse from Baking Powder Factory. Bought of Lombard & Mathewson, Warrenville, [Ct.?] Sampled by J. D. Gaylord, Ashford.

No. 122—G. B. F. Superphosphate, (English?) guaranteed 14 $\frac{1}{2}$ per cent soluble Phosphoric Acid. From H. J. Baker & Co., N. Y. City; sampled by L. S. Wells, New

Britain, Conn. [We suppose all the samplers were supplied by the purchasers.—Ed. *American Agriculturist*.]

	Nos. 118			
	120	121	122	
Percentages.				
Nitrogen.....	15.53*	8.76	.06	none.
Soluble Phosphoric Acid.....	—	5.62	.01	14.96
Reverted Phosphoric Acid.....	—	5.01	.81	1.19
Insoluble Phosphoric Acid.....	—	2.38	1.53	.07
Potash.....	—	2.91	—	—
Sulphate of Lime, (plaster).....	—	—	75.59(?)	—
Moisture.....	3.71	—	—	—
Undetermined.....	0.79	—	—	—

Calculated value.....\$74.73 \$67.04 \$10.82 \$29.09

Cost.....\$30.00 \$50.00 \$20.00 \$29.00

* Equivalent to 95.50 of Nitrate of Soda (about as sold for.)

Cocoa and Chocolate.—While coffee and tea allow of various adulterations, these may usually be avoidable by the careful purchaser, but Cocoa, when made up in the form of Chocolate, the cocoa beans being ground to a paste by the aid of heat, can be largely adulterated with materials which can only be detected by a chemical examination. Sugar is desired by many, and this can hardly be regarded as an adulteration, but starch in some of its many forms, plaster, and chalk, are often used to add weight, and red-ochre, umber, and other earthy paints are added to give the proper color. As chocolate and other such preparations are frequently advised for invalids, it becomes especially desirable that it should be pure. The only real safety for the purchaser is in the integrity of the maker of the article. Since our earliest recollections, the name of Baker has been identified with cocoa and chocolate of the best quality. In Europe it is not uncommon for a business to remain in a family for many generations, but such cases are rare with us, and the Bakers are a remarkable instance of the long continuance of a business under the same name, their cocoa and chocolate manufacture having been carried on for within two years of a full century. The present firm, Walter Baker & Co., while adopting modern improvements, maintain the early reputation of the name, by the excellence and purity of their products, and the purchaser feels sure that the name is a guarantee that the article he buys is exactly as represented.

Changes Which Bring Strength.

Mr. Judd's "Silver Wedding."

If ever a man was wedded to any pursuit, Mr. ORANGE JUDD has been to that of Editor and Publisher of the *American Agriculturist*. And it is no stretch of propriety to say that in marking the 25th Anniversary of his connection with this paper, he celebrated his "Silver Wedding." Probably there is no other paper between which and its readers there exists such a peculiar personal relation, as between the *American Agriculturist* and its constituents. This was so noticeable long ago, that it has been very common for us to speak of the "Great Agriculturist Family," and this has of late been manifested to a degree as marked as it is gratifying, in the many hundreds of letters that have come to us with the renewed subscriptions for the present year.

This Pleasant Relation

between Publishers, Editors, and Readers, is largely due to the fact that we have told our friends more about our business successes, our hopes and our future plans, than is customary; we are sure that this has not been without its good effect, in making its readers feel a greater attachment to and confidence in the Journal. Twenty-five years does not seem such a very long time, but when we say that

A Quarter of a Century Ago,

MR. JUDD allied himself with the *American Agriculturist*, and has devoted to it "a quarter of a century" of hard work (which measured by the work of most men, will count a rounded century), it will be admitted that he might properly celebrate his "Silver Wedding" with the paper. We can not now review the many changes that have taken place in these 25 years, at the beginning of which, the circulation was numbered by hundreds, instead of the many tens of thousands it now enjoys—when it was read mainly in a few adjacent States, instead of, as

now, in every land where the English and German languages are read and spoken. At the present moment the future of the *American Agriculturist* is of more consequence than the past, and we with pleasure announce that MR. JUDD celebrates his

Twenty-fifth Anniversary,

by instituting such changes as can not fail to add greatly to the future prosperity of the "Company," and usefulness of the Journal. MR. JUDD's brother,

The Hon. David W. Judd,

who has had a wide and varied experience as a journalist, will now assume an active part in the business of the concern. The business force is still further strengthened by the addition of

Mr. Wm. H. Beckwith,

a gentleman who has had abundant experience in the publication of one of the most successful special, or trades journals of the day, and who will hereafter devote himself to the business of the ORANGE JUDD COMPANY. The occasion was marked not only by strengthening the business force, but the editorial corps is not omitted in the general improvement.

Mr. Edgar H. Libby,

was brought up a farmer, and, after receiving a thorough education in the sciences relating to agriculture, founded the "Scientific Farmer," and until recently was the Managing Editor of that excellent Journal. Mr. Libby will hereafter devote himself to similar duties on the *American Agriculturist*. We make these announcements with all the more pleasure because they are

Additions, rather than Changes.

While "young blood" and fresh energy are added to each department, no efficient member of the force has departed. The business is so large and so varied—and this remark applies to the editorial as well as to the business department—that each one was, formerly, not only overworked, but was obliged to attend to an immense variety of details. These very strong additions to both departments, allow each one, as has never before been practicable, to devote himself to those business or editorial duties for which he is best fitted; and while those who have borne the "brunt of the battle" these many years, do not propose to relax any of their efforts, they hope, by devoting themselves more exclusively to special departments, to make their work more effective. We have given these announcements that our many friends—and no paper ever had more and better—may see that the rounding of a quarter of a century is marked, not by a recital of what has been done in the past, but by immediate arrangements for the more complete accomplishment of the work of

The Next Quarter-Century

of the AMERICAN AGRICULTURIST. It long ago became "an institution," and the most fitting manner in which Mr. Judd could celebrate the 25th anniversary of his alliance with it was, to place it in every respect upon even a firmer basis than ever before, so that its permanence or its usefulness may not depend upon the health or the life of any one person or of several persons engaged in its different departments. Let no one infer that the new arrangements involve the retirement of MR. JUDD. We have figuratively referred to his alliance with the *American Agriculturist* as "a marriage," and this, like all true marriages, was "for life," but they will essentially relieve him from many cares, and really allow him to become more efficient, as he can now put forth his energies in whatever direction they may be most needed. EDITOR.

Last Call.

This is the Last Month for securing the valuable **PREMIUM ARTICLES**, offered in our general list for 1878. All lists must be sent in this month, as the offers will positively cease at 6 o'clock P. M., **June 30**, except as noted below. Our contracts with manufacturers and dealers extend only for six months of 1878, and we can not respond to those who send for premium articles after that date.

But there is *abundant time* THIS MONTH to fill up uncompleted lists, and to start and complete new premium clubs before July 1. Many have done so every year. A very little time and attention will secure free of cost one or more desirable and useful articles. Let all who have not a copy of the list at hand, send us a postal card at once with name and Post Office address upon it, and say on it. "Send Illustrated Premium List."

Over 20,000 persons have already secured some of these valuable articles, and as many more may get them this month. See abbreviated Premium List on page 233.

To Distant Subscribers.—To put all upon equal footing, as thousands of our readers live at distant points, in all parts of the world, we will allow the time of closing the Premium List to be so extended for such distant readers, that every one, every where, shall have 30 days after receiving this paper, in which to gather and forward names for premiums. Those living almost anywhere in the United States or British North American Provinces, will receive this number about June 1st, and thus have a whole month for making up Premium Clubs.



containing a great variety of items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, \$1.50 a year; Two Copies, \$3; Three Copies, \$4.20 (\$1.40 each); Four Copies, \$5.20 (\$1.30 each); Five to Nine Copies, \$1.25 each; Ten to Nineteen Copies, \$1.20 each; Twenty Copies and upwards, \$1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid....Remittances, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or any full year, sent unbound, for \$1.60....**Clubs** of Subscribers can be increased at any time, at the club rates, 17 new members begin at same date as original club.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the *German American Agriculturist*, and thousands of new subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Munch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings. Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners; all would find it pay to do so.—*Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc.*, because the expense of collecting and making these is largely borne by the

American edition, and no separate office or machinery is required beyond German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—*Please call the attention of your German neighbors to this paper.* It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

A Good Appointment.—The Commissioner of Agriculture has appointed C. V. Riley, who has been for the past 10 years State Entomologist of Missouri, the Entomologist of the Department of Agriculture. Judging from his past, we have reason to expect much useful work from Prof. Riley. The only regret attaching to the announcement, is, that the letter which brings it, also informs us that our old friend Townsend Glover, who occupied the position, has quite broken down in health, and it is feared that his working days are over.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price, and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy* information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

The Winchester Repeating Arms Company, one of the most successful and extensive companies in this country, have leased and fitted up in very fine, attractive style, the ground-floor of the American Agriculturist Building, extending back 114 feet from Broadway, and including the L upon Murray street. Any of our readers visiting the city will be well repaid for a visit to this fine establishment. The Publishers of the *American Agriculturist* occupy nearly the entire first floor above, in four rooms, for General Offices, the Basement for mailing and packing, the fifth floor for editorial rooms, etc., and the sixth floor for printers and engravers. A cordial invitation is always extended to all our friends and subscribers to drop in and see us, whenever visiting the City. The Editors spend much of their time at their various country places, but some of them are usually here a portion of each day. The electrotyping is done at the large establishment of Messrs. Lovejoy & Son, on Vandewater St., and the presswork and folding in the great printing-house of S. W. Green, on Jacob St.

Paris Green.—From inquiry among the manufacturers and dealers, we learn that there are sold in the New York market alone, over 500 tons of this poison annually. One establishment alone, that of F. W. Devoe & Co., sold last year over 150 tons. Nearly all of this is used on the potato crop.

The Frost.—We go to press before full reports come to hand of the effects of the cold spell about May 12th. The area visited by it is unusually wide, and its effects, especially upon tender garden-plants, in most localities disastrous. To what extent the staple grain and fruit crops have suffered, we have yet to learn.

The Tribune's New Printing-Press is one of the most interesting objects to be seen in New York City. In a small compact space stands a machine that draws a wide strip of paper from a continuous roll, prints two copies at a time on both sides, gathers and folds the sheets ready for mailing, and drops them out at the rate of four to five in each second, or 15,000 an hour! All this is done by the machine itself, without the intervention of human hands, except to turn on or shut off steam with a little lever. Any one happening in the city in the early forenoon of any Wednesday should drop in at the Tribune building and see the press in operation.

Advertising Agencies.—Mr. J. H. BATES has taken the large rooms in the New York Times Buildings, formerly occupied by Geo. P. Rowell & Co., and fitted them up finely, and has a well arranged collection of all the newspapers of the entire country. With the advantages here offered, and also at the excellent establishment of S. M. PETTINGILL & Co., so long and favorably known to the press of the country, and which is close at hand, every possible facility can be found by business men who may wish to use the advertising col-

umns of any or all the newspapers and other periodicals issued in America.

The Amer. Pomological Society's Report of the meeting at Baltimore in 1877 greatly exceeds in size, fullness, and usefulness, any of the former excellent volumes. Including the catalogue, it comprises over 200 ample pages, and bears throughout, the evidence of the industry and thoroughness of Col. Wilder, Mr. Barry, Mr. Flagg, the late lamented Secretary, and other faithful workers, and is a volume which is creditable not only to the Society but to the country. The Proceedings are richly worth the membership fee of \$4.00.

Cheap Watches.—Watches are advertised at \$3 and upwards. We have not heard of any one's getting a \$3 watch, though we have seen excuses why they were not sent, and promises to fill the order from the "next lot received." Any one of common sense knows that there must be a limit to the cheapness of a watch that will keep time; the cheapest watch must have a spring and gearing, or "train," must have a face and hands, and the whole must be enclosed in a case.—Of course, if these parts are servicable, no matter where they are made, there must be a point below which the cost can not go. Several weeks ago, Messrs. J. S. Birch & Co. brought us a watch, taken at random from their stock, which they wished us to carry in comparison with our own watch or any other time-keeper. This watch has a case nickel-plated on German silver; beveled crystal, is a stem-winder and a stem-setter; the works, which have a neat look, though not highly polished, are covered with a glass shield, to keep out dirt, and there are, if we mistake not, six holes jewelled. The watch, which is a very presentable one, is called the "Centennial," and has this and a Maltese Cross on the back as a trade mark.—We are thus particular in mentioning the trade mark, as another concern has adopted the name "Centennial" for a very different watch with another device in place of the Maltese Cross. Messrs. Birch & Co., knowing the deception there is in cheap watches, preferred to have theirs tested before offering them. We can only say that the one left with us for trial has thus far proved a most satisfactory time-keeper.

Miles and Acres of Paint.—The largest paint contract ever made, was that of the H. W. Johns' Co., to furnish their Asbestos paint to the Gilbert Elevated R. R., to cover their miles of trestle-work. The surface of wood covered by their paint in the two stores of A. T. Stewart & Co., is estimated at 4½ acres.

The Death of Prof. Henry.—As we are closing these pages the sad intelligence comes to us of the death of Prof. Joseph Henry, Secretary of the Smithsonian Institution. We can only say that not only America, but the world, loses one of its first scientists; there are few remaining whose lives offer so marked an example of pure devotion to science for its own sake. His admirable administration of the Smithsonian greatly contributed to "the diffusion of knowledge among men," while his important investigations and discoveries have made the world his debtor. It was his discoveries in electricity which made the telegraph possible; he established very many important scientific principles, and freely allowed inventors to turn them to profit. He never had time to make money. * * * Since the above was in type, we learn that the Regents of the Smithsonian have elected Prof. Spencer F. Baird, for many years Assistant Secretary, to fill Prof. Henry's position. The best possible thing they could do.

The Umbrella in Agriculture.—It is said that a soldier hired himself to a farmer to dig his early potatoes; after a hearty breakfast, on a hot August morning, the new help seated himself in the shade of the barn, saying to the farmer, "Now, if you want your potatoes dug, bring them along."—"We can not all dig our potatoes in the shade, but there is much exposure to our intense mid-summer heat, that may be, and should be avoided, not only as a matter of comfort, but of health. Sunstrokes are more frequently heard of in cities, as there every easality of the kind goes at once into the papers, while the same percentage of sunstrokes, in a population scattered over a county or two, would scarcely be heard of. We often see a kind-hearted farmer arrange a shade for his horse, while he forgets himself. Of course, most of the active work of the farm must be done under full exposure of the sun, or at least with only the protection afforded by the broad brim of a straw hat. [Mem. do not forget to put a cabbage leaf in that hat.] But in riding, whether upon the mower or reaper, or upon an open wagon along an unshaded road, a full exposure to the noon-day sun can be, and should be avoided. He must be deficient in ingenuity, who can not "conjure up" some screen which shall break the force of the sun, upon the head, at least. These remarks

were suggested by the announcement by Wm. A. Drown & Co., the great Philadelphia manufacturers of umbrellas, that they make a "Wagon Umbrella," especially for farmers, which may be applied to open vehicles of all kinds, including the mower, reaper, sulky cultivator, and other "riding implements." The use of umbrellas by omnibus drivers, truckmen, cartmen, and other drivers, is now very common in cities, and farmers may take the hint from these, and use a wagon umbrella, or other shade, wherever it is practicable.

Waltham Watches.—The Amer. Watch Co. call attention to their new model watch which embodies all the improvements of several years, and which they regard as superior to former styles—however good they proved to be. They are sold by the trade, generally.

To You Gentlemen in Congress.—You have arranged some matters concerning the postal law most beneficially. Other matters are very indefinite, and subject to all sorts of rulings. Here is an example: A farmer in Illinois finds that his seed-corn is destroyed about as fast as he can plant it. The farmer probably labors under the impression that the mail is for the benefit of the people, so as one of the people, he whittles out a neat 6-sided stick, bores a hole lengthwise, puts the insects into the cavity thus made, and closes the opening with a common cork. This is received at his office as 3d class matter. When it reaches us, we are charged 16 cents, because the contents can not be examined. Cases of this kind occur almost daily. The farmer is deprived of the use of the mail if he would send insects, unless letter postage is paid, while the merchant can send samples and haberdashery by the pound. We suppose that postmasters follow what they understand to be the law, but would it not be well to see to the law, so that farmers can receive quite as much benefit from what is called in England the "parcel post," as any other class. As it is now, farmers and naturalists are "left in the cold."

A New Work, Veterinary Obstetrics.—The periods of gestation and parturition are highly important to the owners of valuable domestic animals, as thousands of young animals or dams are lost yearly by mishaps, of which perhaps the mysterious abortion epidemic is by far the most serious. Hitherto stock owners could have no aid, but through (with but few exceptions) a notoriously defective and inefficient veterinary profession. Fortunately, some means of help is now at hand in a new work on Veterinary Obstetrics, by the well known writer, Professor Fleming, of England. This valuable book is profusely illustrated, and complete in details, and we have studied it with great interest. It is necessarily an expensive book, but is worth many times its cost to any owner of but one really valuable breeding animal. A few copies have been received by the Orange Judd Company, which can be supplied at once; others can be procured by ordering them. The price is \$15.00, mailed free.

Cotton Manufacture at the South.—A circular issued by W. H. Oliver, of Newbern, N. C., gives some figures as to the cost of the machinery needed to furnish a cotton factory, and the cost of the supply of cotton in the South. Machinery capable of spinning 1,500 lbs. of lint-cotton daily, will cost about \$13,000, exclusive of a building 50x100 feet, and two stories high, with an engine of 75-horse power. By a new process, known as the Clement attachment to the gin, the seed cotton is prepared directly for the card at a cost of 10½ cents per pound against a cost of 14 cents at ordinary factories. In addition, there is left 3,200 lbs. of cotton-seed, which is valuable for its product of oil and seed-cake. The advantage of a Southern locality for this manufacture is very clearly presented in the circular.

Toe and Heel.—A man wears out his shoes at the heel or at the ball of the foot, while a child's shoes are first "stuffed out" at the toes. Just when this transition takes place, from toe-wear to heel-wear, we are not prepared to say, but it is a question of more practical importance than many over which philosophers endge their brains. We have had a great variety of contrivances to prevent wearing away the heel, and within a few years there have been introduced "tips" for the toes. If a foreigner were to read the sign in Summer St., Boston, of "The American Shoe Tip Company," he might say sarcastically: "In the name of the Prophet—Figs!" "A company, for Shoe Tips, and an American Company at that—here's another Yankee notion."—It is a "Yankee notion,"—and a very good "notion" at that. Children's shoes are sold by millions; if a slight "notion" put to each shoe, will make it—as we have abundant evidence that it does—wear twice as long as the shoe without the "notion," the affair is not so trivial as it might seem, and as this interests every family where there are children in the broad land, the company may properly call itself "American." These tips are merely a metallic plate

formed to fit the toe of the shoe, and turned up in front about a quarter of an inch—just far enough to take the brunt of all the "stopping," and save leather. This great improvement began with copper tips, not desirable for fine goods. These were followed by silver tips, which seemed to be all that could be desired; but the greatest improvement of all is a black tip, finished to so closely resemble leather, that it may be used on the finest quality of shoes, without being conspicuous, or hardly noticeable. It is found that a cap of leather the same as that of which the shoe is made, is of very little service, while the tip places the resistance to wear, just where "it will do the most good." The Shoe Tip Co. claim to be able to prove that the introduction of their tips saves the buyers of shoes \$5,000,000 annually; if the claim be well founded, this, at first sight trivial affair, becomes one of real commercial importance. The tips only are supplied, by the company, to shoemakers in every part of the country.

Directions for Leveling or Terracing Fields.—"J. W. H., Marlow Co., Fla. You will find ample directions for preparing the surfaces of sloping land, to either receive or carry off water without damage, in Stewart's "Irrigation for the Farm, Garden, and Orchard." Although this book relates chiefly to irrigation, yet to make irrigation practicable, the surface must be carefully prepared and drained. These related subjects are also treated in sufficient detail to render the book generally useful.

Death of George Grant, of Kansas.—We regret to announce the death of George Grant, Esq., of Victoria, Kansas, which recently occurred at his residence at that place. Mr. Grant had become widely known as an enterprising resident of Ellis Co., Kansas, where he owned a very large estate, stocked with choice sheep, cattle, and horses. We have frequently noticed the interesting operations of Mr. Grant, and the gratifying success which attended his efforts to introduce high-bred stock into that State. In this he was a pioneer, and his success has led many other persons to follow his example. Until Western Kansas, Nebraska, and Colorado, have become possessed of a large number of fine pure-bred herds. Mr. Grant, a retired English merchant, was an enthusiastic improver of his land and stock, and has done much to benefit his adopted State.

American Berkshire Record.—The American Berkshire Association has done good service to swine breeders in providing a record for pure-bred animals. The value of a pure-bred animal for breeding needs no remark; it is a universally accepted maxim that only a thoroughbred should be used to increase its kind. A record of thoroughbred stock, whatever imperfections may necessarily be attached to it, adds a certain value to recorded animals. To popularize this idea is a good thing, and although some ridicule was at first cast upon a swine record, time has shown good results from it. The Association works not for fame or wealth, but for the interest of breeders, and we desire to call the attention of all breeders of Berkshires to the fact that there is such a Record of which they can avail themselves for a very small fee, and which has become an authentic organ of breeders of these swine.

Cost of a Cotton-Seed Oil Mill.—"W. C., Wilmington, N. C. The cost of the machinery needed for the extraction of oil from cotton-seed, will be about as follows, viz.:

Cost of hydraulic presses.....	\$3,500
Hulling machines.....	850
Pair of rollers for crushing.....	450
Hair mats and bags.....	350
	\$5,150

This machinery will have a capacity for using 10,000 pounds of seed per day, and making 160 gallons of oil and 3,500 pounds of oil-cake. The value of these products will be about \$64 for the oil and \$43 for the cake. Some part of the expenses can be saved by making soap of the residuum of the oil presses and the ashes of the hulls. A cheap building, and a 10-horse power engine, would have to be provided.

Cortland Board of Trade.—A Board of Trade for the sale of cheese has been established at Cortland, Ohio. Sale days are Wednesdays of each week; the hours from 11 to 4. D. D. Marvin, President.

How much Milk for a Pound of Butter?—"T. L. B., Amelia Co., Pa. If milk contains 10 per cent of cream, it will require about 30 lbs. to make a pound of butter. A quart of milk weighs 27/10 lbs., so that about 13½ quarts will be needed.

The Adamant Plow.—"W. L. B., Iliou, N. Y. The two-horse Adamant plow is the one suited for general purposes. This is a very handsome and valuable implement, which has a remarkably easy

draft, a perfectly bright polished surface, harder than steel,—whence the name—and the mould-board is so shaped as to turn a very neat furrow slice as nearly flat as possible. Having plowed our corn ground, both sod and stubble, the present season with one of these plows, we are able to say that it is all that can be desired in a plow. By using movable points, the plow is made much more effective and durable.

Sundry Humbugs.



The selection of the Candle to head the Humbug Column, was suitable in more respects than one. It was originally intended as a warning to those unfortunate who will go blindly for any scheme that promises brilliantly, and who will, even after they have been singed once, try again, like the moths flying towards the candle. While the moths represent those who will, foolishly, be victims, we find, without intending it, that the candle represents a number of popular humbugs. The candle burns brightly for a while, then burns low, then sputters, and at last it is snuffed out altogether. We have had a hand in the work

OF SNUFFING OUT HUMBUGS

for these many years. Among those which have of late been most effectively squelched are the varied forms under which one Elias tries to conceal himself. We find, as in a "Punch and Judy" show, various figures going through with the motions, all with different names, but a look behind the curtain shows but one pair of hands moving the puppets, and the hands are the hands of Elias. This Protean operator does not operate so much as he did. It is but a few weeks since we received

A GREAT MANY LETTERS DAILY,

asking about Russell & Co., Hetherington & Co., Blanck & Co., and others, who offered to dispense freely (for a consideration) gold watches and heaps of jewelry; about various mining schemes, from the most tempting "Silver Mountain Co.," down to the one-horse dodges of Clark & Co., and Keys & Co., with their slips, asking if "this signature is genuine," a full history of all of which is to be found in our former numbers. Apropos of

THESE SIGNATURE SLIPS.

A friend in Pa. writes that the signature which comes back to him must have been cut from his letter to a concern in Greenwich St., N. Y., which pretends to trade in inventions. Our correspondent feels sure that this invention shop is in league with Clark & Co., and all the rest of those who try the signature dodge.

NEW WALL STREET SIDEWALK CIRCULARS,

setting forth that those who send them have peculiar advantages for making a small sum of money into a large one, have appeared of late. We can only say of these circulars as we have said of former ones—The parties who issue them, though they hail from Wall St., are not known to the regular business men of "The Street." do not belong to the "Board of Brokers," and are practically unknown. They mainly come from the cheeky hangers on of the street, who are known to the regular business men as "sidewalk operators" and "gutter snipes." We do not advise our readers to invest money with any one, for Wall St. operations, unless they can afford to lose every cent of it. If they have money which they wish to throw away, there are many respectable brokers who will (for a commission) lose it for them openly and above-board. Pay no heed to these circulars....The good work of the "Massachusetts Society for the Improvement of Agriculture," which allowed us to make last month, such a complete exposure of

JONES & CO., THE "BUTTER COMPOUND" CHAPS,

has been most beneficial in its results, as it has saved the farmers of the country many thousands of dollars, for which these farmers owe abundant thanks to that venerable, but still actively useful Society. Jones appears to be, for the present, perfectly squelched, but he has turned up in so many shapes before (including that of defendant in suits before the U. S. and other Courts, in which he has been heavily fined), that we may look for him again in some other form—like "the old woman who sold earthenware."—"In some tall pitcher or broad pan, *lie in his shop again may stand.*" One of Jones' dodges was, while living and carrying on his business at Ashland, Mass., his letters were mailed and received at South Framingham, three miles, and at Hopkinton, four miles,

distant from that place; yet with all this dodging his mail has been stopped at different times. We have a pretty full history of this young man's career, which may be useful if he starts anew.

HUMBUGS FOR FARMERS AND GARDENERS

are still extant in the offer of most wonderful seeds and plants. If any one wishes to try any of the new and astonishingly prolific kinds of corn, offered from some before unheard of, far-off town, let him go slow; if the corn prove half as valuable as advertised, a small sum invested should produce enough to furnish seed for next year—but let no one risk his crop by sowing *any new thing* to the neglect of old and tested kinds.... Some chaps have been taking orders in Pulaski Co., Ill., for "Thornless Gooseberries," and when the plants were found to have the usual number of thorns, the plea was made that it was the *berry* only that was "thornless." A certain lawyer appears to be actively engaged in

WRITING THREATENING LETTERS

to various parties on behalf of makers of quack medicines, and these parties write to ask our advice. We do not keep a "Law-shop," and our advice can only be given on common-sense principles. If these parties have agreed to do a certain thing, we think that an average jury will decide that they must conform to their agreement, even if the stuff in question is merely a quack-medicine. Unless they are prepared to stand a suit, and are able to show that false representations were made, when they agreed to do certain things, and can show fraud, our advice is, to settle as they best can, and regard the cost of settlement as the price paid for a lesson which teaches them not to

"TOUGH, TASTE, OR HANDLE,"

or have anything to do with any secret medical compound whatever. This is to be said, however, that most of these threatening letters are from "barking dogs that never bite;" they get what they can by threatening a few times with increasing vehemence, and stop short of actual law-suits. If we had been duped into an unintentional agreement about a quack medicine, we would stand a good deal of threatening and a little lawing, if it came.... For many years the *American Agriculturist* fought the war against Humbugs not only unaided, but without the least glimmer of sympathy from any journal whatever, whether "agricultural" or secular—indeed at the present day a journal that claims a leading position in agriculture, and is in some respects entitled to it—persists in the weekly publication of the most evident frauds. If it receives as many complaints of its course as come to us, it must be well paid to allow it to defy the protests of its readers. Just now a word of encouragement comes in

THE CHICAGO EVENING JOURNAL,

which congratulates itself that the laws of Illinois, which make every one who proposes to practise medicine, show a regular diploma, or pass an examination before the Board of Health, have had a most excellent effect; "over 1,200 medical humbugs have been obliged to shut up or leave the State." Elated by this sweep, the "Journal" proposes to go further; it holds that charlatancy and quackery do not attach themselves to medicine only, and proposes a law which shall free the State of

SHYSTER LAWYERS AND CLERICAL PRETENDERS,

and thus purify two other worthy professions.—Go on, brother of the Journal, we are with you in every good work... We have had frequent occasion to say that these columns can not be used for personal ends, and if any one wishes to "get even" with, or expose another, the very place he can not do it in, is the Humbug column of the *American Agriculturist*, which is solely devoted to the public good, and has never, so far as we are aware, been used as a medium for the redressing of private grievances. As these general warnings have not had their full effect, we are obliged to make an example of

A. B. PATTEN, OF GREELEY, COLORADO,

Patten, we have before us your letter to one C. D. P., in Chicago, Ill., in which you complain that some kind of a gimcrack, which you purchased for 25c., is not worth the money. With that we have nothing to do. You say:

"This and others of your advertisements are regular swindles, and I am prepared to make you smart for it. * * * One of our papers offers five dollars for every swindle or humbug exposed by its subscribers. Now, unless in ten days I receive \$10, your name goes into that paper. Orange Judd will hear from me, besides others, and you will be exposed. Don't think I am fooling. I mean business. Send me the money, or you will be exposed."—There, Mr. A. B. Patten, how do you like the look of that in print? You have laid yourself open to a suit for "blackmailing." The courts in the Eastern States are justly severe upon the writers of threatening letters, and would make short work of you by giving you long work on behalf of the State. We hope that the Western courts are equally severe, and that "C. D. P." may test the matter. Patten, you are a high old reformer. You feel that you have been swindled, but can be bought off for \$10. You "mean business," but what very small,

sneaking "business" it is. You would not be worth the prominence we have given you, were it not as

A WARNING TO OTHERS,

against using the name of Mr. Judd, or any other publisher or editor of this paper, or that of the *American Agriculturist* itself in any such manner. We have tried to stop this by giving general caution—hereafter we shall take a more direct method, and name persons and places.

Docks.—"B." The only thing to be done with docks, is to pull them. This is not difficult when the land is moist, and if the roots are large, a bar or lever of some kind may be needed. It is desirable to get the roots out entire, or they will start anew.

Tomatoes and Cancers.—The story has gone the rounds of the papers, that the use of tomatoes tends to cause cancer, and some persons, actually alarmed, write to ask if it is so. Tomatoes are eaten and cancers occur (though very rarely), and we can not prove that the one has no relation to the other, any more than we can not prove that they do not cause baldness, squint-eyes, corns, and crooked little-fingers, but we think they are quite as likely to cause any of these as cancers.

The Cooley System of Setting Cream.—The advantages of a method of setting milk for cream by which the temperature may be kept steady and as low as possible, and access of air to the cream be prevented, are now fully recognized by dairymen. There are several devices for the deep setting of the milk, but only one for the submersion of the deep cans of milk in the ice cold water, which is the most effective. This is known as the "Cooley System," the apparatus for which has been advertised in our pages. We have had their apparatus in use for some months, with very satisfactory success. A report of a meeting of the Chatham, N. Y., Farmers' Club, held January 5th, mentions the exhibition of samples of butter made by a member who had set some milk in open pans, and in the Cooley deep cans. The butter from the deep cans was of very superior quality. A similar report comes from Iowa, where, at the Buchanan County fair a diploma was given for the best creamery butter made by the Cooley process. At this fair, creamery butter is not permitted to compete with dairy butter, else the first premium would have been awarded.

Selling or Using Bones.—"Q. T. G.," Morrow Co., Ohio. Unless there is a bone mill near by, where bones can be ground fine, it is better to sell them at 50 cents per hundred, and buy superphosphate ready made at \$35 per ton. It is a dangerous and troublesome job for persons unused to such work as handling and mixing acids to make superphosphate at home.

Mushrooms.—"J. P.," Ohio. You could hardly raise mushrooms in the open ground during either of the summer months, and it would be difficult to do so anywhere, unless in a cave or cellar, so situated that it would keep at a low and even temperature.

Irish Juniper.—"Postmaster," Potter Co., Pa. The Irish is only a very erect and compact variety of the common Juniper, and it is not possible to say, from a mere bit, what the tree is. It is certainly neither a Hemlock nor a Red Cedar.

White - Crested, White - Polish Fowls, were illustrated and described last month—Mr. Sperry, their owner, writes that he is so overwhelmed with letters that he can not answer them, and wishes us to announce that he has no eggs for sale or to give away.

Grass for Winter Grazing.—"B. W.," Highlands, N. C. The best grass for winter grazing is Kentucky blue grass. This pasture must be kept solely for this use, and not grazed at any other season. It will grow well in decadened timber.

Paris Green for the Potato Beetle.—Abundant experience has shown that there is no known effective remedy against the potato beetle, except Paris green. All other applications have failed, while this is effective, and at once. There are a few important precautions to observe in procuring and using it. The first is, to purchase only a really pure article; an adulterated and cheap one may cause the loss of a crop. F. W. Devoe & Co., Fulton and William Streets, New York, have for some years past given special attention to the manufacturing of pure Paris green, and their packages contain an article that is really pure. Next, an adequate supply should be procured at once, because the price increases with the demand, and at the same time the supply decreases, as the manufacture can not well be carried on in hot weather. The poison should be kept in the most secure manner, and used without waste. Messrs. Devoe & Co. send to applicants a circular with plain and

practical directions for using the poison.—And we will add that with proper care, Paris green is a safe article to use; that it is the great remedy against this Potato pest—that a tablespoonful of it in a watering-pot full of water, and having a sprinkling nozzle, can be readily and easily carried and applied to the potato vines affected, with a certainty of killing the beetles. The Paris green does not dissolve; hence the need of keeping it constantly stirred or shaken up in the water, as it is applied. We have tried this with gratifying results. There are various useful contrivances for applying the green as dry powder mixed with flour or other divisor.

What is a Hone.—"D. C. C.," Roselle, N. J. A road scraper or leveler would hardly be recognized under the name of "hone." The use of the word "hone" for this implement on Long Island, must be local only. It is always best to call a thing by its commonly known name, as this saves much explanation. Everybody would know what a "road-leveler" is.

Tree Roses.—"F. A. B.," Mercer Co., Pa. These can not be classed as humbugs, although the representations made concerning them may be fraudulent. There is no special variety known as the Tree Rose, as almost any rose may be made into a "tree" by budding it upon the stem of a Dog-rose, at the height of three to five feet. If "thousands of dollars" have been expended for these roses in your county, it is quite time that the people knew that they are quite unsuited to our climate. The hot sun scorches the tall naked stock, and the top is killed by the winter; they seldom last more than two years, while the majority are finished the first winter.

Kidney Worm in Hogs.—"F. H. N.," Rowsburg, Ohio. When a pig is paralyzed in the hind-quarters, it is not always the effect of worms in the kidneys or in the loins; worms are very rarely found in the kidneys, but more frequently infest the muscles and fatty tissues of the loins. In the majority of cases, however, the paralysis is caused by a disease of the covering membrane of the spinal marrow, and consequent effusion which interferes with the operation of the nerves of the locomotive and digestive apparatus. The remedy is a counter irritant, such as turpentine or mustard applied to the loins, and a diuretic which relieves the pressure of the effused serum. One ounce of turpentine may be given in two ounces of linseed oil every second day, or one dram of saltpetre may be given every day. The turpentine will be useful in case worms should be the cause of the trouble.

Feeding Cows for Milk.—"N. P. M.," Columbus, Ohio, writes:—What is the most profitable way to feed cows; to give the meal dry, wet with cold water, or wet with hot water; with labor at \$20 per month, corn worth 40 cts., oats 25 cts., and 7 cts. a bushel for grinding? My present practice is to haul out the manure as fast as made, returning with a load of fodder. The manure is spread as hauled. The meal I feed dry. I have just commenced a milk dairy, and desire to get the largest amount of good milk at least cost. My practice is to feed one-half basket of fodder at 5.45 A. M. to each cow; milk at 6, at 7 turn out to freshly-pumped well water. While cows are out the stable and mangers are thoroughly cleaned; then 6 quarts of meal given to each cow, and one basket of corn fodder. The cows are then allowed to come to their stanchions, and at 12 M. have one to one and a half basket of fodder. At 4 P. M. the cows are again turned out to fresh water, while the stables and mangers are cleaned; then feed 6 quarts of meal and $\frac{1}{2}$ -basket of fodder, and the cows returned to the stable. At 5.45 P. M. feed one basket of fodder. At 6, milk, and close up the stable for the night.—[We can not see that the above practice can be improved upon.]

Swine, Pigs, and Pork.—It is not surprising that there should be a large demand for works upon swine, when we consider that these animals—taking the country through, and at a low valuation—are estimated as worth about \$70,000,000. Swine are so rapidly multiplied, and so easily raised, that in some parts of the country—even where they are most valuable as a farm product—they have been sadly neglected. The idea that "one hog is as good as another," has prevented proper attention to the breeds, and the treatment indicated by "root hog or die," however it may have resulted as to *rooting*, has led to *dying* by wholesale. The results of this management, or no management, have had their proper effect. When a farmer who has depended upon his pork for a large share of the ready money that comes to him in the course of the year, finds his swine suddenly swept off by hundreds, and he stands helpless and without remedy, it is a low heavy enough to make him stop and inquire "why is this?" The best answer that we can make to all who have suffered similar losses, or who fear such, is, get Coburn's "Swine Husbandry," and study it carefully. This work, while full in other matters, gives special attention to the diseases of swine,

and shows very plainly that the much and justly dreaded "Hog-Cholera," is to be regarded as an *avoidable disease*. The appearance of this fatality among swine, is, in many cases, an indication that years of neglect have produced their legitimate results, and though when it once appears, it may be communicable, swine in a proper sanitary condition are not liable to its spontaneous outbreaks, and are much less subject to take it from others, than those which have been systematically neglected. This work is by a large breeder of swine in Kansas, and gives in full the Western methods with these animals. A work not the less valuable of its kind, is "Harris on the Pig," which takes up the subject in a different manner, and is full upon the origin of the different breeds of swine and their characteristics. It gives special attention to the value and management of thoroughbred animals, and while its author as unmistakably gives preference to the Essex, as Mr. Coburn does to the Berkshire, other breeds have their merits fairly set forth. This work gives much in the detail of pig management that the other does not touch, and the two works together may be regarded as a *library*, embodying the present knowledge on "Swine, Pigs, and Pork," as set forth by two eminently successful breeders in widely separated localities. Both works are published by the Orange Judd Company, and are sent post-paid, Coburn's for \$1.75, Harris' for \$1.50.

The Potato-Beetle—Paris Green—An Englishman on.

—The Colorado Potato-beetle or Potato-bug, being a genuine native American, of course the proper place—as such things go—to find the latest intelligence concerning it, is in an English Journal. That most excellent monthly, "Hardwicke's Science Gossip," had a few months ago a letter from one W. V. Andrews, "Corresponding Secretary of Long Island Entomologists Society, U. S. A.," in which are statements of such a remarkable character that the author hardly needs to state "I am an Englishman;" for no American familiar with the subject could have made them. This "Secretary" advises his "countrymen," in case the Potato-beetle should appear there, to "use no Paris green." The reasons for this advice show that he knows nothing about Paris green, and that whatever entomological knowledge he may have of *Doryphora*, he has had little practical experience with "tater-bugs in the field. Hear him: "For larger lots [of the beetle] the ordinary butterfly hag-net, swept gently along the potato tops, will capture more beetles in an hour than Paris green will kill in a week!" Will the "Secretary," when he goes out hunting with his "ordinary butterfly drag-net," state how many *larvæ* he finds in his ordinary entomologists "drag-net?" Those who have any practical knowledge of the beetle, as an agricultural pest, will be prepared for the absurdity which follows. This Secretary says: "Mr. Rye tells you that Paris green is a favorite remedy here, but he does not understand the American way of doing things. Some State entomologist, or other, probably had a friend in the oil and color business, and gave a friendly puff to Paris green. Then the oil-and-colorman advertises in some agricultural papers that he has the 'never failing exterminator of potato-bugs, Paris green,' and the editor of that journal at once *strongly* recommends it. You do not do things in that way in honest old England, but we do here."—This Andrews is both impudent and ignorant. As to "some State Entomologist or other," we can now recall but two "State Entomologists," both of whom are practical men, who are known for their services to agriculture, and could no more advise the use of Paris green, or any other article, from interested motives, than they could malign another by the indirect method shown in the quotation. The dig at "the editor" of "some agricultural papers," (though "an Englishman," this Secretary's English is none of the best), is something that is so bewilderingly stunning that we do not know what the effect may be when it becomes known that there is such a man as Andrews, and he has written all that. As one of the "editors" we say—if it is the last scratch we are to write, we *will* say it—"Now, Andrews, don't!—No, they do not" do things in that way in honest old England."—Here, if one finds a useful remedy, he tells what it is, and allows every one to use it, knowing just what he is handling; and if dangerous, he knows how to guard against its injurious effects. In that 'onest h'old H'England they have not—and more's the pity—"the American way of doing things." In that beloved country—Oh, "W. V. A.," why did you leave it?—if one finds anything that will kill a plant louse even, does he publish the remedy?—Not much! He first writes to the papers, and tells the public that he has discovered "Suthink." After a while the stuff appears in papers or bottles, labelled "Gishnert's Compound," "Fowler's Insecticide," "Abysinnian Compound," or some such thing, and we are sorry to say that respectable papers not only allow such arrant quackery to be advertised in their columns, but actually recommend the use of the stuffs, of the composition of which they probably know nothing. This

Secretary so dislikes "the American mode of doing things,"—things are done so much better in "honest old England"—that we advise him to take his "ordinary butterfly bag-net" and go home. He will never be missed from the scientific circles of the country he has maligned. For the benefit of those Englishmen who may be in search of information concerning the Potato-beetle (we do not suppose it possible to teach the "Secretary" anything), we will say that the *best, fullest, and most reliable* account of the insect, its natural foes, and its proper treatment, is to be found in a work called "Potato Pests," published by the Orange Judd Company, and to be had of Trubner, London, and no doubt of other booksellers. This work is by Prof. C. V. Riley, who is one of our first scientific entomologists, and easily the *first* in the practical application of entomology to agriculture and horticulture. It is true that he has the misfortune to be "some State Entomologist," still he is not only "an Englishman" but at the same time a man of science, and a gentleman, and he is not, to our knowledge, the "Secretary" of any thing.

Poultry Literature.—None of the "minor economies" of the farm are more important than the poultry-yard. It not only supplies eggs and fowls for the table, but is often the chief reliance of the housewife for pocket-money. But there is no point on the farm in which the difference between good and bad management is more strikingly manifest, and the difference between success and failure is an important one. After a careful examination of the various works on poultry management, we found none so clear and concise, or of which the teachings were more strongly marked by common sense, than Wright's "Practical Poultry Keeper," and what is very unusual in an English work, it appeared to be quite as well adapted to our conditions as those of English poultry keepers. Arrangements were made by the Orange Judd Company for its publication in this country, and it remains the best general standard work on the subject. [Sent by mail for \$2.] A smaller, more compact, and very useful work is Saunderson's "Domestic Poultry," by a gentleman who has been a very successful exhibitor of poultry. [Sent by mail in paper for 40c., and bound in cloth for 75c.] An important series of articles written for the *American Agriculturist*, by H. H. Stoddard, now editor of the "Poultry World," Hartford, Conn., has been collected and published under the title of "The Egg Farm." While the teachings of this are directed toward the greatest production of eggs, it contains much that is useful to those who raise poultry for their flesh. Indeed it is a real store-house of practical hints and suggestions. [Sent by mail, in paper covers, 50c., in cloth, 75c.] In his "Poultry Yard and Market," Mr. Corbett gives his experience with his style of incubation, and artificial mother, and various other matters of interest to the poultry-raiser. [By mail, in paper, for 50c.; in cloth, 75c.] These works are all by practical men, and together cover about every aspect of poultry-management. Those who wish highly ornamental works, in which the breeds are illustrated by fine colored plates, can for \$9 procure Tegetmeier's Poultry book, a standard work by the most eminent English authority on the subject.

An Index to North American

Plants is a more popular title than "Bibliographical Index to North American Botany," and we choose here a popular title to commend to Nurserymen, Florists, and others, a work which, though compiled especially in the interests of botanists, can not fail to be of the greatest utility to all who have to do with plants and who care to refer to original sources of information. Every one interested in native plants, whether herbs, shrubs, or trees, is aware how widely scattered is the information relating to them. Botanists will understand its value from its proper title, which we have given. We can best give an idea of its utility to nurserymen and others who wish to know about plants, by a single illustration. We turn at random to our common Thilip-tree (incorrectly "Poplar" in some States), and find 41 references to works in which it is described or noted; and it is moreover indicated, by the use of full-faced type, that in 18 of these places there are figures of the tree, or some portion of it. The references are not confined to botanical works alone, but horticultural books and periodicals are also quoted. What is done for this one tree, is done for all other trees and plants, and it will be seen from this example, that this index is a key to all the sources of information concerning every North American plant. The work is by that acute and pains-taking botanist, Mr. Sereno Watson, of the Herbarium of Harvard University, who has done an eminently good thing for not only botanists, but horticulturists generally. Of course such a work, so brain-wearing and time-consuming, can never "pay," and we doubt if it could ever have found a publisher, had not that most useful Institution, the Smithsonian, assumed the publication, as one method of "diffusing knowledge among men." The first vol., extending through the poly-

petalous families, is now out. A limited number of copies, at \$2.00 in paper, and \$2.25 in cloth, by mail, post-paid, may be had by addressing "Curator of Harvard Herbarium," Cambridge, Mass.

The Plants of North America, or of

any other country, taken together, are called its "*Flora*," just as the animals constitute its "*Fauna*." When we speak of the "Flora of North America" we may refer either to the plants themselves, or with equal propriety, to a work describing these plants. "North America," so far as its "Flora" is concerned, starts from our southernmost boundary, and extends northward as far as vegetation of any kind exists. We frequently see mention of the varied agricultural capabilities of our country, affording sugar-cane, and the banana, and extending through various zones, until we reach a point where the only crop is ice. Quite as wonderful in its extent and variety is the native vegetation. Let one start from Southern Florida with its tropical and subtropical plants upon one side, or from Western Texas, Arizona, and Southern California, with their almost Mexican vegetation, on the other, and pass northward along the Atlantic coast, or along the Pacific coast, or starting part-way (though not mid-way), between, along the great mountain ranges which form the "back-bone" of the Continent, and continuing upon either line until the Arctic regions are reached, the number and variety of native plants that such a traveler would meet with, is immense. Yet one must enumerate and describe all these plants, growing in such a variety of climate and locality, if he would record the plants of our country—or in other words, write a "Flora of North America." Several Europeans, in the early part of the century, undertook this task, but "North America" as here defined, was unknown to them. About 40 years ago, the lamented Doct. Torrey, together with his then young associate, Doct. Asa Gray, made a noble beginning at the "Flora of North America," and carried it well along, but just then North America increased too rapidly, and among other reasons, the want of settled boundaries made it necessary for them to suspend the work. Our boundaries being now well established, the newly acquired territory having been well explored, Doct. Gray has now undertaken the task of recording the plants of this vast country, and we have already received the first instalment of "The Flora of North America." Botanists will learn of this work and its peculiar features from other sources; but there is a large class of persons, not scientific botanists, who are interested in knowing that a work, in which every native plant of the whole country is recorded and described is in course of preparation and publication. The work will be in two volumes of about 1,200 pages (large 8vo.) each. For reasons which botanists will appreciate, the new work begins where the earlier work of Torrey and Gray, just alluded to, left off. The present part, one-third of the second volume, includes the Monopetalous Exogens (*Gamopetalæ*) beyond *Compositæ*. The unbotanical reader will better understand its scope when we say that this part includes, among other large families, the Heath Family, with so many highly ornamental plants; the Milk-weeds and the Gentians; the Phlox and allied families, rich in garden species; the Borage, the Morning Glory, the Solanum, the Fig-wort, and the Mint Families. For the botanical character of the work, it is sufficient to say that it is by Doct. Gray, and indeed we may say the same of its mechanical aspect also, for being printed under the critical eye of the author, it presents that judicious arrangement, and convenient grouping that will be best appreciated by those who most frequently consult the work. New York: Ivison, Blakeman, Taylor & Co., p. p. 402, price \$6.00. Supplied from this office.

Basket Items continued on page 233.

Bee Notes for June.

BY L. C. ROOT, MOHAWK, N. Y.

This, in most sections, is the general swarming month. Those who practise natural swarming, should have hives ready, and kept in a shady place. After the bees are hived, protect the hive from the rays of the sun, with a roof, or other cover. Swarms are often lost by going to the woods, if these directions are not followed. I much prefer artificial increase. Where but few swarms are kept in hives with movable frames, an occasional examination may be made, and if queen cells have been made, it will indicate the proper time to divide the bees, which may be done as follows: Remove the hive from which the swarm is to be taken to a new position, several feet distant, and put a new hive in its place. Take one comb, containing brood, the old queen, and all the bees that will adhere to it, from the old hive, and place it in the center of the new one. All queen cells should be removed from this comb, or one selected that has none

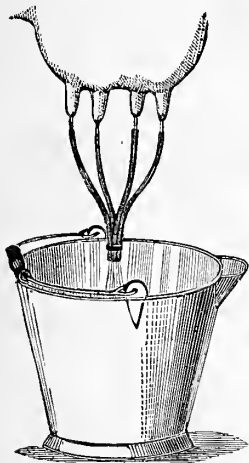
upon it. Fill the space at each side of this with empty frames, and place an empty frame in the old hive at the outside. After the queen cells in the old hive are all sealed over, cut off all, except one of the largest and best looking, from which the colony may be supplied with a queen. Or, what is greatly preferable, a laying queen may be given it the day after dividing.

Weight of Bees.

No. 1 has been united with another, and, therefore, cannot be reported. No. 2 consumed, during April, $4\frac{1}{2}$ lbs. of honey, No. 3 and 4, $3\frac{1}{2}$ lbs. of honey each.

Cow Milkers.

Many inquiries have been made in regard to "Milking Machines"; replies to these by mail have been impracticable on account of their number. We therefore take this opportunity of stating what we know of this machine. The idea of milking a cow by means of a mechanical device is attractive on the face of it, because this operation is one of the most irksome of all farm labors. There has been a prejudice against the use of any other methods of milking than the old fashioned one, and we confess to have felt to some extent the influence of this prejudice, and have been very cautious in referring to the Milking Machine. For exceptional use in the cases of sore or chapped teats, hard milking cows, gargeted or caked udder, and other similar difficulties, there has never been a question as to the necessity for using a milker; some such means is indispensable. But for general use to save time and labor, we have not previously been able to say that the machine was advisable. After a personal trial we must admit that we have been forced to modify our previous opinions. We give an illustration of the machine and its manner of use. The tubes, of pure silver, are inserted carefully in the teat, the milk having been first started, to allow the opening to be found. The pure India rubber tubes then conduct the milk, which flows freely into the pail. That is all there is of it. Care must be taken to use only such machines as are of pure material, and after the milking to put the tubes into some clean, cold water, and well free them from milk. In using the machine, we find it operates as follows: It draws the milk so entirely



THE COW MILKER.

away that none can be procured by stripping; it acts apparently with much ease and comfort to the cow, our animals evidently showing much surprise and pleasure at the freedom from the usual manipulation of the teats, and turning the head and viewing the novel process seemingly with great interest; the milk pours with great rapidity, a large pail, holding 14 quarts, being filled in 7 minutes; the process is perfectly clean, and the milk gathers no impurities, as in the usual handling of the teats and udder, in which numerous scales of skin, hairs, and "cowy" flavored matters unavoidably fall into the milk. The relief from the muscular exertion of the wrists and arms, is very grateful to the milker. So far we are certain. Of the future effect upon the cow we are not prepared to say, because this is a matter which can only be learned by the continued use of the milker; but there is evidence that the machine has been used in a noted Scotch dairy for 8 years, and this may go for something. As it is, we shall continue to use it, and take whatever risk there may be. As the tube is very small, and is retained in the teat only 3 or 4 minutes, and the teat is to be stripped down always after finishing milking, we apprehend no evil results. For the introduction of the milker into this country, we are indebted to Mr. Wm. Crozier, of Northport, Long Island, who has introduced several useful implements to American farmers

The Hay Crop and How to Gather It.

The present season has thus far (the middle of

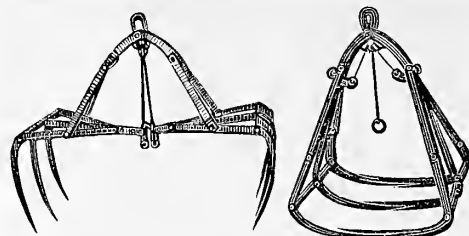


Fig. 1. OPEN. NOYES' GRAPPLE FORK. 2. CLOSED.

May) been very favorable for a large hay crop, and the labor of gathering it will be greater than usual. There is likely to be an extra large demand for haying machines and "tools." We have already spoken of mowers, conspicuous among which stand the Champion Haymaker, and the New Model Buckeye. After the mower comes the tedder, a machine which, in thick clover, will be found of great use to spread and turn the cut herbage, and prepare it for the rake. Of the tedders, we have used one made by the Ames Plow Co., while another

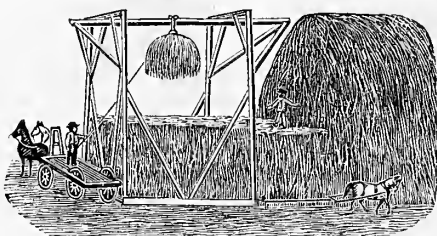


Fig. 3.—FIELD PITCHING APPARATUS.

style, made by the Higganum Manufacturing Co., has impressed us favorably. The steel-tooth horse-rake is doubtless one of the most effective implements in the hay field. Of the large number in the market, that made by Wheeler & Melick Co., and another, made by J. R. Whittemore, are excellent implements. When the hay is gathered, Foust's Hay-Loader will load a wagon in ten minutes or less,

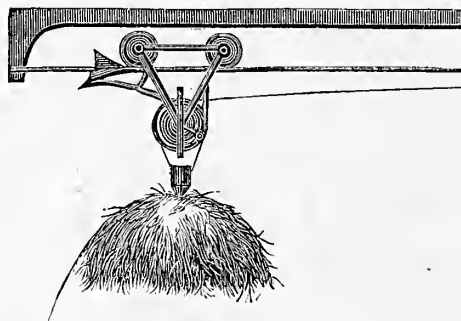


Fig. 4.—AMERICAN HAY ELEVATOR.

and where the crop is large, will be indispensable, if economy of time and cost is the first consideration. This loader was illustrated in the *American Agriculturist* of Nov., 1876. After the hay is loaded, the Horse Hay-Forks and Pitching Apparatus, by which it is put away in the barn or stack, are perhaps the most important of any of the labor-saving haying machinery; because after a crop is well made, it may be seriously damaged by heavy rains before it can be secured in the barn or the stack by the usual slow methods. Some of these hay-forks have already been described in the *American Agriculturist*, others are briefly referred to as follows. The "Noyes Grapple Fork," shown open at figure 1, and closed at figure 2, is an excellent implement, and can be used for hoisting straw, corn-stalks, or sheaves of grain. This is made by the "U. S. Wind-engine and Pump Co.," Illinois. The same Company also make the "Field Pitching Apparatus" (fig. 3), used

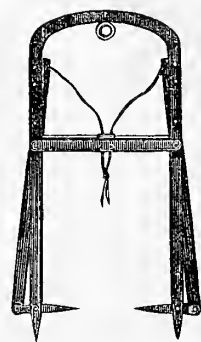


Fig. 5.—DOUBLE HARPOON FORK.

for stacking hay. The "American Hay-Elevator," shown in figure 4, is made by J. R. Fitzhugh, of Pennsylvania. This can be fitted to any building, and has the merits of being simple and easily worked. The "Double Harpoon Fork," made by the "Pennock Manufacturing Co.," Penn., (fig. 5), is a fork of great capacity and strength, and may be used in short straw, hay, or hound grain. Another pitching apparatus, of which we have no illustration at hand, is Chapman's. Of the comparative merits of all these, it is difficult for one who has not tested them all to speak. Before deciding it will be well to procure circulars of the various makers, and examine into the merits and testimonials of each. The P. O. address of the makers can be found in the advertising columns.

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Science Applied to Farming.—XLII.

The Use of Brains in Farming—A Lesson in Chemistry.

On the blanks for recording results of experiments with the fertilizers supplied for experiments this season, is the motto: "One of the chief wants of our agriculture is closer study and observation by farmers." In an account of last season's experiments, presented at a meeting of the Conn. State Board of Agriculture, occurs the following:

"These reports are presented for just what they are, not developments of any new scientific truth at all, but efforts by practical men to apply established principles of science to the aid of their farming. And if I were to tell the truth, it would be that in my opinion, though such experiments, properly conducted, will be of the greatest value for the information they bring, yet, over and above this they have a still higher usefulness in the stimulus they give to closer study, more accurate observation and more rational application of the principles of science. The apparent object in introducing them was to work upon farmer's soils. Under this lay in my own thought, a deeper purpose, to work upon their owner's minds. And in this regard, at least, the outcome has been most gratifying."

We shall be aided in our efforts in this direction by

A Short Lesson in Chemistry.

Vegetable and animal substances, and manures and soils as well, contain three kinds of material—WATER, ORGANIC MATTER, and MINERAL MATTER, or ASH. If you keep a visp of hay or a hone for a time in a hot oven, the water will be driven out. If you put the dried material in the fire, the organic substance will be burned away, and escape as gas or smoke, while the mineral matter will be left as ashes. The ash was all gathered by the plant from the soil. Part of the organic matter was supplied by the soil also, but the most of it came from the air, to which it returns when it is consumed. The ORGANIC MATTER consists chiefly of the four chemical elements, CARBON, OXYGEN, HYDROGEN, and NITROGEN. We are familiar with carbon in charcoal and lamp-black, which are nearly pure, and in diamond which is quite pure carbon. Carbon united to oxygen forms carbonic acid. Hydrogen and oxygen, which in their pure state are gases, unite to form water. When we inhale air in breathing, its oxygen is absorbed into the blood through the lungs, and unites with carbon and hydrogen of our bodies and our food, and we exhale carbonic acid and water. When wood burns in the stove, or vegetables decay in the air, carbonic acid and water are likewise produced. We need not trouble ourselves about carbon, oxygen, and hydrogen, in fertilizers, because they are supplied to the plant in abundance by the atmosphere and the soil, through the leaves and through the roots. But the

Nitrogen

is an important ingredient of fertilizers. It is, in its pure state, a gas, and makes up about four-fifths of the air, the other fifth being oxygen. Nitrogen combined with hydrogen forms AMMONIA. The odor of "spirits of hartshorn," and of "smelling salts," is due to the ammonia. Nitrogen, combined with oxygen, is known as NITRIC ACID. In these and other combinations it occurs in minute quantities in the atmosphere, and in considerable quantities in soils and manures. Plants are unable to make use of the pure nitrogen of the air, though they absorb a very little combined nitrogen, in the

form of ammonia, nitric acid, etc., from the atmosphere. By far the largest part of the nitrogen of plants is absorbed from the soil through the roots. Nitrogen is available to plants only in certain combinations; is slow to form these compounds, and easily leaves them. It readily escapes from the manures and soils into the air, and is leached away by water. It is one of the most commonly deficient, and hence the most costly ingredients of the food of plants. Farmers are continually paying from 20 to 40 cents per pound for nitrogen in fertilizers, and their crops often fail for want of it.

NITRATES are compounds of nitric acid with other materials called bases. Thus nitric acid united with the base soda, forms *Nitrate of Soda*, which is one of the most valuable of our fertilizers.

The Mineral Matter or Ash

consists of several ingredients, of which the names are Potash, Soda, Lime, Magnesia, Iron, Silica, Sulphuric Acid, Phosphoric Acid, and Chlorine.

POTASH.—The basis of this is a very soft, light, silver-colored metal, called *Potassium*. Potassium unites with oxygen to form a compound which is known in chemistry as potassiumoxide or oxide of potassium. It is also called *potassa*, or more familiarly, *potash*. When wood ashes are leached the potash is dissolved out, and it is the active ingredient of the lye.

SODA, or sodium oxide, is a compound of oxygen with the metal *Sodium*. What is commonly called soda, is *carbonate of soda*, a compound of soda with carbonic acid. Common salt contains sodium also, but here combined with chlorine instead of oxygen. *Chlorine*, by itself, is a yellowish green gas. As it unites with sodium to make *chloride of sodium*, or common salt, so, when united with potassium, it forms *chloride of potassium*. Potassium chloride is the chief ingredient of "muriate of potash," one of the most important of the German Potash Salts.

LIME (calcium oxide), is the basis of limestones, marble, oyster shells, and the like. In these it is combined with carbonic acid in the form of carbonate of lime. By heating limestone the carbonic acid is driven off, and lime is left in its common caustic unslaked form.

MAGNESIA is the oxide of the metal magnesium. The "calcined magnesia" of the apothecaries is impure magnesia, with the carbonic acid expelled.

IRON is the same element, whether found in plants, manures, or soils, in which it invariably occurs in very small proportions as an oxide, or in the various ores from which it is manufactured on a large scale.

SILICA.—Quartz, or "rock crystal," is pure silica. Flint is nearly pure silica. Silica combined with various other elements, makes up the larger part of the rocks and minerals of the globe. Sharp sand consists chiefly of silica.

SULPHURIC ACID.—SULPHUR is familiar to every one in the forms of brimstone and flowers of sulphur. Sulphur united with oxygen, forms sulphuric oxide, or, as it is more frequently called, sulphuric acid. The ordinary sulphuric acid of commerce, called "Oil of Vitriol," and used in making superphosphates, consists of sulphuric oxide with a small proportion of water.

SULPHATES.—If sulphuric acid and lime are mixed together, they will unite and form a chemical compound, *Sulphate of Lime*. Gypsum or plaster is a more or less impure sulphate of lime. Sulphuric acid and magnesia make *Sulphate of Magnesia*, which we know as Epsom Salts; it occurs in some of the German Potash Salts. So *Sulphate of Soda* consists of sulphuric acid and soda. *Sulphate of Potash*, the basis of the best potash salts, used as fertilizers, consists of sulphuric acid united to potassa. *Sulphate of Ammonia*, which is a valuable fertilizer, consists of ammonia and sulphuric acid.

PHOSPHORIC ACID.—Phosphorus is the material which is used for the tips of friction matches, and

causes them to shine when rubbed in the dark. It burns very easily, and in so doing unites with the oxygen of the air, and forms phosphoric oxide, or phosphoric acid.

PHOSPHATES.—Just as sulphuric acid combines with lime, potash, and other bases to make sulphates, so Phosphoric Acid unites with the same basis to form phosphates. Phosphate of lime is the most important of the phosphates. It is the basis of bone. When bones are burned, the water and organic (animal) matter are driven off, and we have left the bone-ash, which is nearly pure phosphate of lime. The South Carolina, Navassa, Canada, and other fossil and mineral phosphates, which are used for fertilizers, contain more or less earthy matters mixed with the phosphate of lime.

Whence Plants obtain their Supplies of Food.

Plants get part of their food from the air, through their leaves and other green parts, the rest from the soil through their roots. This is proven by a vast amount of laborious and accurate experimenting, carried on for the most part in the European Experiment Stations, for the purpose of discovering the laws of plant nutrition and growth.

WATER.—Plants have the power of absorbing water through their leaves, but the bulk of their supply comes, and must come, from the atmosphere to the soil, and thence to the plant through its roots.

ORGANIC MATTER.—CARBON, OXYGEN, AND HYDROGEN.—The carbon of plants is taken from the atmosphere. The leaves absorb carbonic acid, and with the aid of light wrest its carbon and oxygen asunder, setting oxygen free, and thus purifying the air, while they retain the carbon. Carbon unites with hydrogen, oxygen, and nitrogen, to make up the various tissues of the plant, the root, stem, leaf, and seed, the wood and bark, the gluten, starch, sugar, and so on. The atmosphere supplies carbon far in excess of the demands of plants. The best experiments indicate that the carbon is all, or nearly all, obtained from the air. The source of the oxygen and hydrogen is not definitely settled. It is very probable that the water absorbed through the roots is the main, if not the entire source of supply.

NITROGEN.—Our cultivated plants get the bulk of their nitrogen from the soil, through their roots. Many years of labor of the best investigators, and many thousands of dollars, have been devoted to the study of the sources of the nitrogen of plant-

stores up atmospheric nitrogen for plant-food. The nitrates in the soil, formed mostly from the decay of vegetable and animal matter, are the chief natural sources of the nitrogen of plant-food. Ammonia, which, like nitric acid, comes from vegetable debris and from manures, as well as from the air, is also used by plants. Other compounds of nitrogen, no one yet knows just what or how many, can also be assimilated by plants.

MINERAL MATTER, OR ASH.—The mineral ingredients of plants are derived exclusively from the soil. Of these, POTASH, LIME, MAGNESIA, IRON, PHOSPHORIC ACID, and SULPHURIC ACID, must be furnished to all agricultural plants, through their roots and by the soil, in order to their growth. If the available soil-supply of any one of these is deficient, the whole crop must suffer. As regards soda, silica, and chlorine, the experimental evidence is not so decisive. A small quantity of chlorine has been proven necessary for the perfection of some plants. Soda is needed in very minute quantities, if at all by crops. A little of silica is probably necessary to the perfect blossoming and ripening of grain.

To sum up in a few words: "Air and water together yield the materials out of which fully ninety to ninety-eight per cent of crops is built up. The soil has to give for their nourishment only the two to eight per cent of mineral matters, which remain as ashes when they are burned, and the one-half to two per cent of nitrogen which they also contain."

Contiguous Houses, Costing \$2,000 each.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These designs were prepared for a block of five houses erected last year for Mr. Geo. Storms, facing one of the principal avenues at Bayside, L. I. The entire structure is 90 feet long, running north and south, and occupies half the avenue end of a village ground plot. One end section being a "corner," has a portion devoted to business purposes, the balance of the building is used exclusively as residences. They are thoroughly furnished with ranges, heaters, pipes for cold and hot water, and gas, and complete sewerage. The desirability of these buildings (and also of those in last month's *American Agriculturist*) is proved by the fact that

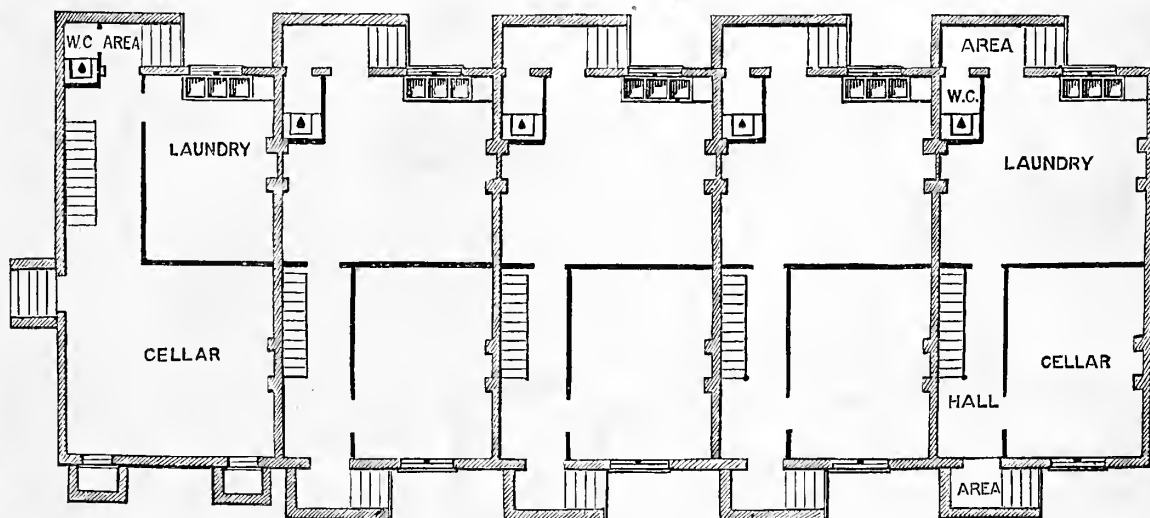


Fig. 2.—PLAN OF CELLARS OF CONTIGUOUS HOUSES.

food. The theory that plants avail themselves of the free nitrogen of the air, of which there are thousands of tons over every farm, must be regarded as wrong. The theory that plants in general, and the "large-leaved" plants in particular, as clover, turnips, corn, etc., obtain a good deal of combined nitrogen (ammonia and nitrates) from the air by their leaves, is hardly tenable. The gain of nitrogen from this source, seems to be very small indeed. The most of the nitrogen of our crops is got from the soil through the roots. The soil gathers some nitrogen compounds from the air, however, and it is extremely probable that it assimilates free nitrogen, and thus, in two ways,

all of them were engaged, and several occupied before they were fully completed.... **Cellars.** (fig. 2).—Height of ceilings, 7 feet. Each is well lighted, and has outside entrances from the street and from rear yards. A hall, laundry, and water-closet, are floored and otherwise finished off; the balance is unfinished, to be used as a cellar for fuel and vegetables. The Laundry has a set of stationary wash-tubs, with cold and hot water. The Water-closet has an outside door leading from the rear yard, (this is designed to obviate the necessity and unsightliness of the usual out buildings.) The Fire-places shown are left open, and have contiguous flues the whole height of the chimneys,

These flues being heated through contact with the upper fires, insures a thorough ventilation of this story.... **Elevation**, (fig. 1).—This building appears well from all directions, is imposing in out-

.... **Second Story**, (fig. 4).—Hight of ceilings, 9 feet. The divisions in this story are similar in each of the five buildings, and consist of a hall, two large and two small rooms, and the necessary

The bath-tubs and water-closets are cased with black walnut.... **Plumbing**.—To give an exact idea of the plumber's work, the specification used as a guide in its introduction is herewith given:

There must be a hopper water-closet, and a wash-tub with three apartments put in each basement. A No. 2 range, with elevated oven, and water-back; a 30-gallon oval-topped copper boiler of croton pressure strength, resting on an iron Lockwood Stand, and an 18x30-inch iron sink in each kitchen; a bath-tub, 5 ft. long, lined with planished copper; a wash-stand, with 14-inch bowl, marble-top and wall plates; a pan water-closet, with bowl, pull, and crank attachments; and a tank, 1½x1½x3 feet, lined with sheet lead, in each bath-room. All supply pipes to be of galvanized iron, of the following sizes: The main of 1½-inch, 93 feet long, laid in the cellar bottom below the foundation walls, near the rear chimneys, one end to extend outside the building for street connections. Branches of ¾-inch leading from the main supply to the tank, with secondary branches leading to the hopper-closet, wash-tubs, and sink. All other water-pipes to be of lead, as follows: For cold water leading from the tank, to the bath-tub, water-closet, and boiler; and for hot water leading from the boiler, to the sink, wash-tubs, and bath-tubs, of A ¾-inch; for connections between the water back and boiler of AA ¾-inch; and for wash-stands of A ½-inch. The water and hopper closets are to have traps of 4-inch, lead, connecting them

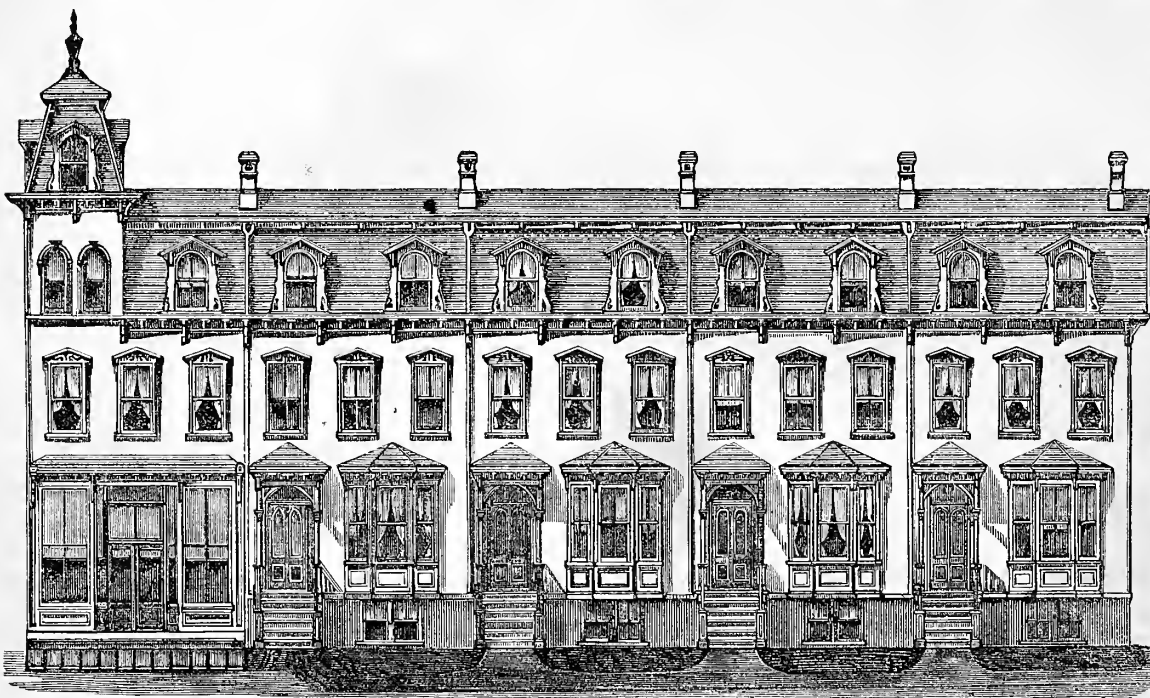


Fig. 1.—ELEVATION OF CONTIGUOUS HOUSES AT BAYSIDE, L. I.

line, animated in details, and nicely proportioned—the hight agreeing with its breadth; the openings, and dressings, are changed in each story to

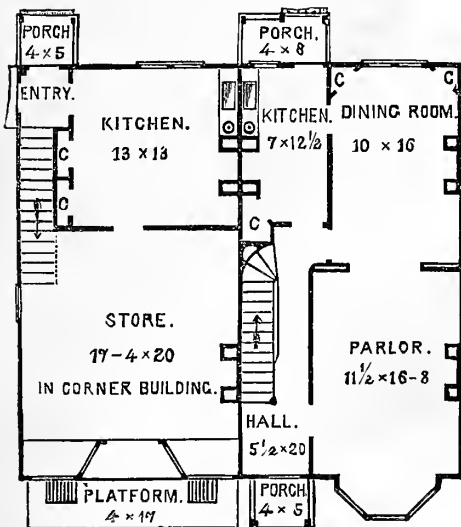


Fig. 3.—PLAN OF FIRST FLOORS.

give diversity, the whole being well suited to its very public and prominent situation. The "Corner" building has an observatory extending above the main roofs, indicating its terminal position, and adding an agreeable feature of irregularity in the sky-lines. The Street end at the rear of the tower has a Mansard roof with two dormers; the opposite end shows a full pediment.... **First Story**, (fig. 3).—Hight of ceilings in four houses, 10 feet. The floor in the corner building is lowered 2½ feet, making that part 12½ feet in the clear. A hall, parlor, dining-room, and kitchen, are finished in each of the four houses, and a store, kitchen, and entry, in the corner building. Each of the parlor has a large hay-window, and is divided from the dining-room by sliding-doors. The Dining-Rooms have two closets each. The Kitchens are conveniently arranged with closets, ranges, boilers, and sinks. The Store is fair sized, has a double door entrance from the avenue, and has a wide stairway leading directly from it to the cellar. The Kitchen at the rear is for the use of the parties doing business in the store. The Family Entrance to the corner building is from the street at the side,

closets. The room over the store is used as a parlor. One of the small rooms in each house is fitted as a bath-room. The Stairs leading to the attics are placed above the main flights, with a door at the foot of each.... **Attic**, (fig. 5).—The Attic of the corner building is partitioned off, and finished as shown, with ceilings 9 feet high, and has an inclosed stairway leading to the observatory. The latter is 7 feet square in the clear, and is also finished. Each of the four adjoining attics are plastered on their sides, but have no partitions....

Construction.—The Excavations are made in the earth for the corner building, to the depth of 5½ feet—and for the others, 3 feet. The Foundations are of 8-inch brick work. The Frame is of sawed, seasoned timber. The Main Division Walls between the houses are decafened, by filling with pale brick and mortar, "laid flat." The Sidings are of clear pine clap-boards, laid on rolled sheathing. The Mansard Roofs for front, one end, rear, and the tower, are slated; all other roofs are tinued. The interior walls and ceilings of the two full stories, are hard-finished on two coats of brown mortar; the balance is white-finished on one coat of "laid off" brown mortar. The halls, parlors, dining-rooms, and store, have stucco cornices and centers in each, and the openings to the hay-windows are arched and moulded. Marble Mantles are put in the principal rooms, and marble shelves and stucco trusses are put in the large bed-rooms.

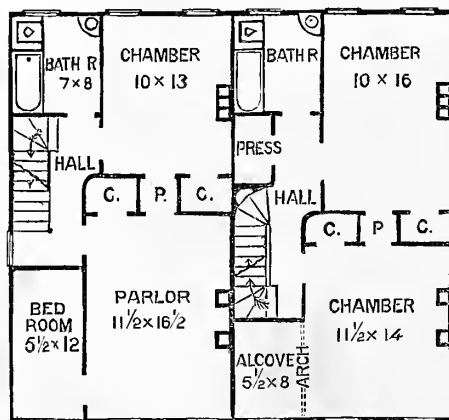


Fig. 4.—PLAN OF SECOND FLOORS.

Fire-place Heaters are put in the parlors, with pipes connecting them with registers in the second story.

with the soil pipe. Ventilating pipes of 2-inch tin, to lead from the 4-inch traps to above the roof, and have cone-shaped covers set 2 inches above their openings. The soil pipes to be of 4-inch iron, and lead from the second floor to the tile drains at the rear and below the cellar bottom. Waste pipes to be of 1½-inch, with traps, all of lead, leading from the bath-tub, wash-bowl, sink,

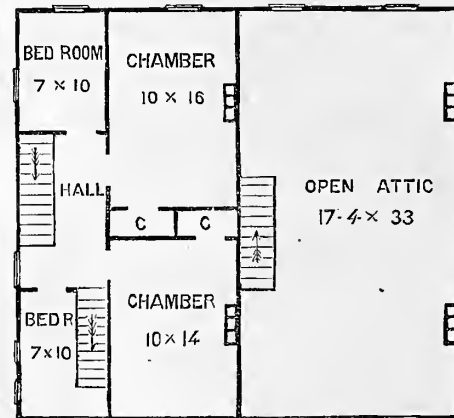


Fig. 5.—PLAN OF ATTICS.

and wash-tubs, to the soil-pipe. Brass lever "stop and waste" cocks must be put in the branch supply-pipes near the basement floors, and in the pipes leading from the tank to the boiler. A "Fuller's" Tank Regulator to be connected with the supply-pipe leading to the tank. A "Sediment" Cock must be attached to empty the boilers, with pipes leading to the waste-pipes of the sinks. Finished brass ¾ "compression" cocks, with flanges, and thimbles, must be provided for the sinks and wash-tubs, and similar cocks silver-plated, for the bath-tubs; plated swing cocks for the wash-stands. Self-acting compression cocks must be put in the connections with the hopper closets. Plugs, with chains, must be put in each wash-tub and bowl, and trap-screws put in all traps. Finally, all to be properly connected, in a substantial and workman-like manner, and warranted one year with ordinary use.

Estimate for cost of materials and labor:

Mason's materials.....	\$2,200.00
Lumber of all kinds.....	1,950.00
Slate and Tin.....	450.00
Roiled Sheathing.....	50.00
Cornices, etc., from Mill.....	250.00
Porches and Stairs with Railings.....	800.00
Hardware and Nails.....	400.00
Mantles.....	360.00
Plumbing, Gas Pipes, and Sewers.....	940.00
Doors, Sash, and Blinds.....	725.00
Cartage.....	100.00
Carpenter's labor, not included above.....	1,800.00
Painting.....	475.00
Total cost of Five Houses.....	\$10,000.00
Average cost, \$2,000 each.	

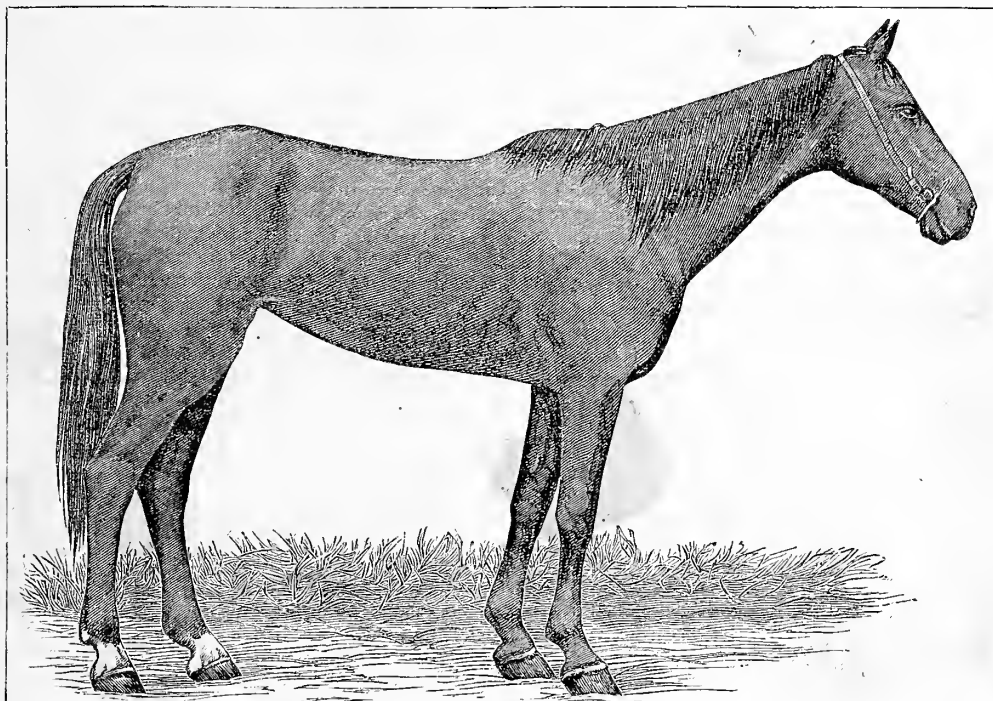
American Roadsters.

It is claimed by many advocates of the "trotting ring," that the renowned American race of roadsters or trotting horses owes its existence, or at least its excellence, to the so-called "trials of speed" in the ring, and that the interest in these trials or races is maintained by betting. It is also claimed that without the excitement of the betting all the interest in the race-course would subside; that there would be no races, no trials of speed; as a consequence there would be no demand for speedy horses, and there would be no efforts on the part of breeders to improve the race. Indeed, it is asserted that the business of breeding, whether professional or amateur, would cease to exist were races and betting abolished. It is only sufficient to broadly state this claim in this manner to show its absurdity and falsity. There is enough interest in the horse to make its improvement and increased value and usefulness, an object not only of profit, but of pleasure and excitement. There is nothing more agreeable or exciting to any one, old or young, than rapid motion. The savage and the most cultivated man alike enjoy riding upon or behind a fleet horse. So long as there are numbers of men who can afford to pay largely for their pleasures, the breeding of fast horses will ever be a profitable pursuit, and so long as men delight to skim over the road as fast as possible, there will be a demand for the best roadsters. Besides, this class of horses may be of great value in case of war, because, for attack or defence, well mounted cavalry is of the greatest moment. Decisive battles have been lost for want of good horses, and have been won by the overpowering force of well mounted cavalry. No nation possesses a better supply of horses than the United States, and the time may come when the maintenance of our excellent races of trotting horses may be of the greatest service to us. Much has been said by some few American writers, to disparage American trotters in favor of the English running horses; but not to speak of the uselessness of a galloping horse upon the road, the evidence is all in favor of the endurance, strength, and hardiness of our trotters, and against the qualities in these respects of the running horse. As a specimen of an American brood-mare, we give the above portrait with which we have been favored by Mr. Thomas Fitch, of New London, Conn. It is a copy of a photograph taken by Messrs. Schreiber, of Philadelphia. Mr. Fitch has been engaged in

breeding roadsters and family carriage horses for many years, and we have seen some fine specimens in his stables. This mare, "Lady Buckingham," was bred in Canada West, and was sired by "Tip-poo," out of a "Reindeer" mare. She has been driven faster than 2.30, but has never been trained,

both cows and horses, are pets, and remarkably gentle, as must always be the case, when the breeder is kind and gentle to them, never uses the whip, and has a natural inclination towards his occupation. This style of training is especially valuable for driving horses, in which docility, gentle-

ness, and fearlessness add so much to the value. Mr. Fitch's method of breeding is worth notice. He writes, "I never breed from a mare of less weight than 1,000 lbs., nor more than 1,150, height 15.2 to 16.1; choosing good form, color, and action. Both sire and dam should be as nearly perfect as possible; but a defect on the side of the sire is not so injurious as on the part of the dam. The dam produces and rears the colt, and she should be as near perfect as possible."—While all breeders do not hold this opinion, there is, nevertheless, much truth in it, and doubtless much injury has been caused by neglecting proper precautions in selecting mares for breeding. There has been far too



"LADY BUCKINGHAM."

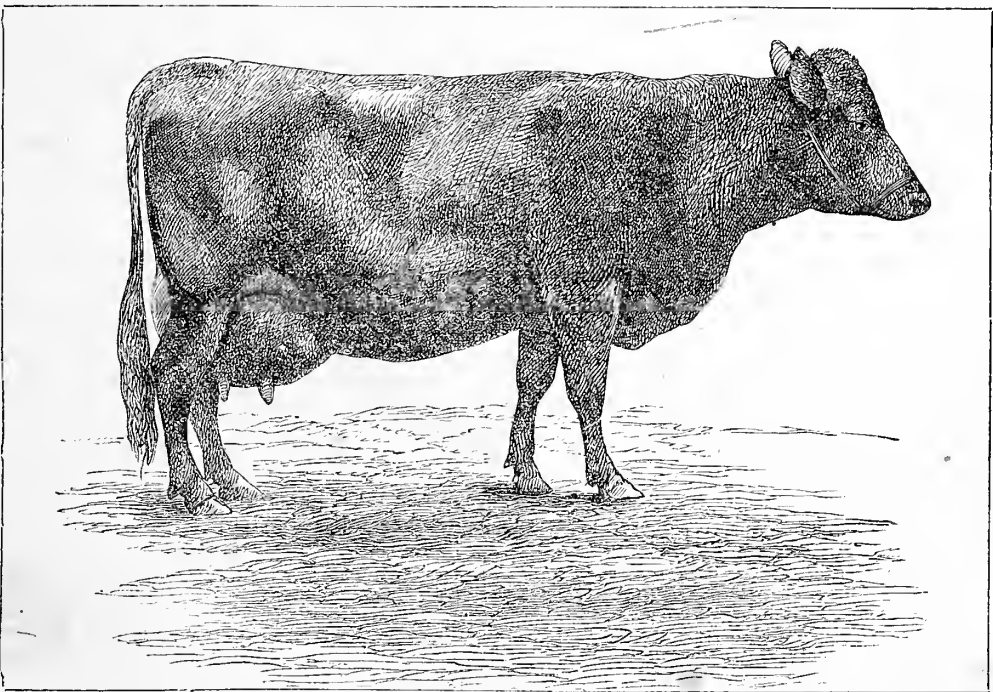
although speeded occasionally. Mr. Schreiber, the well known animal photographer, when he took this picture, thought it to resemble that of "Lady Thorne" more than any other he had taken, and the resemblance is certainly very striking. The produce of this mare so far, in Mr. Fitch's hands, has been two fillies, one 5 years old, named "Pneuma," by "Young Hambletonian;" she is over 16 hands high; in color, a dark-brown, with white hind feet, and has fine action. The other, 3 years old, named "Tacheia," by Rev. M. Murray's "Live Oak," is of large size, chestnut in color,

much stress laid upon the importance of the sire and his power of overcoming defects in the dam.

The Norfolk Polled Cattle.

One of the most useful efforts of a gentleman, who has interested himself greatly in the furtherance of an improved agriculture—Mr. A. B. Allen, of New Jersey, and one of the founders of the *American Agriculturist*—has been the attempt to popularize in America the polled Norfolk cattle.

For some unaccountable reason there is a common prejudice against hornless cows. There is something in a name, and if these cows were not called "mooleys," but simply "polled" or "hornless," it is possible that the prejudice would not exist. Cattle that have no horns are more quiet, inoffensive, and comparatively harmless, and in case of animals that are to be shipped by rail, there is great economy in the freight, as a larger number of hornless animals can be carried in a car, than there can be of those with spreading horns, and there is no risk of injury from the horns of the quarrelsome beasts. Of the three varieties of polled cattle, the Galloway, the Angus, and the Norfolk, the last is



NORFOLK POLLED COW.

with white hind feet, and is also very fast. The mare is now in foal, as are all Mr. Fitch's brood-mares, to "Toronto Abdallah." Mr. Fitch has so far been very successful in breeding this class of horses for family use, devoting much care to secure a fearless and docile disposition. All his animals,

the best for the dairy; the others being excellent beef cattle. The Norfolk cattle are red, and the above engraving, a portrait from a photograph given in the *Agricultural Gazette*, London, accurately shows the form of a good specimen of this class of cows. The fine fore-quarters, deep hind-

of the running horse. As a specimen of an American brood-mare, we give the above portrait with which we have been favored by Mr. Thomas Fitch, of New London, Conn. It is a copy of a photograph taken by Messrs. Schreiber, of Philadelphia. Mr. Fitch has been engaged in

quarters, and well developed udder, give unmistakable proof of the high milking qualities of the breed. The Norfolks are an old established breed, somewhat larger than the Devons, and of a very similar color, a bright red. They are better milkers than the Devons, yielding frequently 2,800 quarts, or over 6,000 pounds of milk, between the annual calvings. There is already one herd established here, and the qualities of the breed might induce dairy-men and breeders to import these animals largely.

Among the Farmers.—No. 29.

BY ONE OF THEM.

About Auction Sales of Stock.

I have attended three remarkable sales of live-stock lately held in, or near, New York City, and think I have gained some insight into the causes of the success or failure of auction sales. The success of any sale is measured by the satisfaction given to both buyers and seller. If both are content, we may conclude that the occasion is a rare success.

When Edward Fowler, of Southampton, England, offered 24 head of Channel Island cattle for sale in New York, 3,000 miles from home, every body knew that the sale was absolutely unconditional, that there was no such thing as "bidding up" or "buying in." His auctioneer had every thing systematized—plain, clear, full catalogues, and a high platform up to which the animals could be led; they would thus stand close to the auctioneer and his assistants, and in plain view of all those present.

Peter C. Kellogg's "Combination Sale" of trotting horses was the most admirably managed affair I have ever seen or known about. Widely advertised, the stock offered was most fully and admirably catalogued; and every owner who sent a horse to the sale was pledged, over his own signature, not to permit any "bidding up" or "bidding in," or any unsubstantial bids, that every thing might be perfectly fair, and every sale absolute. The result was, a perfect freedom in bidding, as no one suspected any unfair dealing. In each of these cases, the fullest opportunity had been given to examine the stock. There was no doubt in regard to the pedigrees or ability to enter the breeding animals or their progeny in the herd register, or the trotting register, and so buyers being well informed, and confident of fair dealing, bid freely. The Jerseys sold at a higher average price than any Jersey cattle ever sold for before in this country. One heifer, and that, too, with quite a faulty udder according to my notion, brought the highest price a Jersey cow ever sold for in this country (\$620). The horses, likewise, sold at a higher average than any similar lot of horses ever before offered, "Kentucky Prince" bringing \$10,700, the highest price ever before paid for any trotting horse at auction.

Now as to the third sale. It was extensively advertised as a "Clearing Out Sale," so to speak—that is, every animal on the farm was offered, and a plausible reason for selling out was given. The animals were of pronounced excellence, and their fame had been trumpeted far and wide by newspaper writers. Buyers came hundreds of miles, ready and willing to spend their money. The cattle were in excellent condition, and though standing in their stalls, and not easily examined, while some could not be handled at all, being turned loose in a paddock, nevertheless, they made a very favorable impression. The catalogue was poor enough, being printed in a confused way, with the pedigrees wretchedly "mixed" on the inside of a country newspaper. When it came to the selling, there seemed to be no concert of management, the rabble huddled around the auctioneer and the animals, and thus forcing back those who might have been buyers. The auctioneer failed utterly to impress his audience with confidence in himself or his sincerity, or with the belief that the sale was a bona-fide one. As usual, the bids started slowly, and a noble bull was sold on the first bid for \$100, when he would have been cheap at \$400 or \$500. After this, some bull-calves were offered, being started at \$150 and \$200 on bids received by the auctioneer (?) by telegraph, and declared sold without a bid being

made upon the ground. This was a damper, and when the cows were brought in, the bidding was duller than ever; one or two were sold, when some more bids came "by telegraph" of \$200 or \$300 for calves hardly two months old. This seemed to convince the people that there was something wrong; not a few asked one another if it were not "a put up job." It stopped the bidding, and the sale was closed. The hundreds of dollars spent in advertising the sale were lost; there was a good deal of credit lost, and it is not too much to say that such a crowd will not be likely to come again.

What Makes a Successful Sale?

The essentials for securing a successful auction sale of live-stock are, therefore, as I conceive: 1st. The offer of animals of real value at a time when they are wanted. 2d. Not only advertising well, but telling buyers all they need to know in a well arranged catalogue, which must be, or at least appear to be, perfectly honest and truthful. 3d. Giving the people present at the sale the assurance that the animals are offered without reserve, and absolutely to the highest bidder.

Harnessing a Yearling Filly.

It was "Roxy's" birthday on the 12th of April, and it was celebrated by putting her in harness for the first time. The headstall, without blinders, was put on, the check-straps tightened to fit, the Dutch collar slipped upon her neck, and the saddle and breeching attached thrown upon her back. The breeching made her a little nervous, so I sent for a little sugar, which quieted her at once. In this "rig" she was led about for a few minutes; then the reins were drawn out from the saddle-rings, and she soon allowed herself to be driven about quite well, I going behind her. Then we geared her to a very light road-wagon, and she looked a little nervous, but her attention was at once taken up by the offer of sugar. She was led a few steps, and allowed to see clearly the wagon following behind her, and again sugar was offered. Soon she might be led anywhere drawing the wagon, at a walk or trot, up hill or down. I even drove her once around the house, but thinking the lesson sufficient for once, we stopped here. She was not in the least frightened from first to last, and I have not a doubt was impressed chiefly with the new experience to her sense of taste. Such an exercise repeated once in every fortnight, or even once a month, with slight variation, as she becomes familiar with her duties, and learns to stop and back at the word, will, in a short time, make her a thoroughly "broken" horse, without her even knowing it herself, she thinking only of the sugar she gets for good behavior. There is no lack of spirit in the filly, but so far, there is no show of wilfulness that does not yield to the mildest coaxing—nor any vice. It would, however, take but a very little jerking, and a cut or two from a whip, to turn her "milk of kindness" into curds, and make her as contrary as she is now pliable.

The Early Bird.

I have been watching the hens a good deal lately in the mornings, and find that the "Leghorns" are invariably out first. There will be half a dozen of these trim, dainty biddies, out for the proverbial "early worm," long before any others, except a single "Spangled Hamburg," the only one we have. Then come the "Leghorn half-breeds," then "Plymouth Rocks," while the "Cochins" and "Brahmas" do well if out within an hour after sunrise. Each season confirms me in the view that the "White Leghorns" are the most profitable of the egg-laying, non-setting breeds. I have little or no experience with "Brown Leghorns," but my neighbors complain of their fighting, and the dash of "game" blood that is in them would doubtless impart more or less of that tendency. The same thing is true of the "Silver-gray Dorkings," which have been, as is well known, crossed with "Duck-wing Games" to secure uniformity and brilliancy of plumage; the cocks are often great fighters. The "White Leghorns" I have had, seem little inclined to fight, and this is true of the "Hamburgs," yet possessing all the wide-awake, early-bird qualities of the "Games," which are certainly as active as any. I wish I

could keep them, but they require so much attention, so quickly deteriorate if not carefully and intelligently bred, and "tested," too, that I shall allow a little experience, of a few years ago, suffice.

Clover Freezing Out.

For the first time since we have lived here, we find clover, in low spots, entirely frozen out. Passing over the ground about the last of March, I saw the ground nearly bare, and lying here and there all over the surface were slender roots, nearly as large round as one's finger at the upper end, and tapering rapidly to say $\frac{1}{8}$ or $\frac{1}{16}$ of an inch at the other, and six or eight inches long. Lifting, I found two or three inches often still in the ground, and could hardly believe that they were clover-roots, until I found upon a few, some half green, minute leaves struggling for life. I remember in Hartford County, Conn., we used to have the clover winter-kill, and that it was called "freezing out," but I certainly never before saw roots drawn up fully eight inches, as was the case with my clover this year. Timothy, on the same land, was thrown out, too, so that I do not believe it could live; but the frost seems to have had no effect on the Red-top, which appears to glory in the ruin around it.

Tillage, Plowing, Harrowing, Clod Crushing, and Rolling.

American farmers are averse to doing thorough work in the matter of tillage. We want plows which turn a furrow 14 inches wide, and then we rake over the surface with a broad harrow, and put in the seed. I do not see much objection to the use of a wide furrow in plowing, yet I believe that the narrow furrows of the English and Dutch plows are decidedly better for the soil, but I have found, time and again, to my cost, that half way work in preparing a seed-bed is disastrous. Last year, I hired a piece of work done, at a time when I could not well attend to it. A rough out-lot, upon which the moist season had brought up an abundant crop of Ragweed, Wild Carrots, Yellow Clover, Evening Primrose, Running Blackberries, with Pussy Clover, and Rattle-box, and fifty other things for aught that I know, the natural product of a gravelly and neglected soil. This I hired plowed and sowed with rye. I was not there to watch it, so now the rye looks as if it had been drilled in, following the furrows. The ground had been harrowed after plowing, but not half enough. Such land should be harrowed and cross harrowed, and diagonally harrowed, until the surface soil is mellowed and knocked out of the embrace of the myriad rootlets, which fill and hold it. The stones, moved by the plow, at least those near the surface, should be brought to the top. There they protect the, at best, thin soil, from winds and frost, and the larger ones may be picked off. What there is of fine soil is settled and compacted, by the harrowing alone, so that the roots of the plants have a much better hold upon it. Besides, the harrowing exposes the roots of the sod and weeds to the action of the sun and atmosphere, to their almost certain death, which is what we desire.

This, I conceive, is the effect of thorough tillage by the harrow upon my poorest soil, and upon similar soils everywhere. If the ground is being prepared for grain and grass, these may be sown at once; then let the stones be picked off, and finally let the field be rolled, for the sake of still further compacting the soil, and leaving a surface less exposed to injury from winds and from washing.

I have rarely much use for a clod crusher, and when I have, I find that the wooden-toothed harrow of my neighbors, turned upon its back, to be the very best I ever saw. It might not do on clays or clay-loams, where baked clods, or masses of earth, packed by the plow, and half baked by the sun, cover the field and resist both the harrow and roller. These require the severe treatment of the clod crusher of the agricultural stores, which, with its disks of forks and zig-zags, has a good deal the look of a concentrated cast-iron thunderbolt. The harrow, on its back, is enough for eorn stubble, sods, bunches of weeds, etc., which dodge harrow teeth, when the implement is right side up, but can not escape the beams and braces which are drawn actually in contact with the ground.

Disk Harrows.

I am interested in investigating these just now, but I can not pronounce definitely upon their merits. I have found that when an implement actually fails to do any particular kind of work well, though excellent for other things, that very fact will suggest its name. Now the disk harrows turn a number of little furrows beautifully, each tooth working like a small plow. They crowd into the mellow earth the strawy manure, sticks, chips, and such things not too large, and cover them nicely. They cover seed well, cut an old hide-bound sod, and by a peculiar action when drawn repeatedly over it, leave it in condition to renew itself to its manifest advantage. These things, I am sure, they do quite well, but they are called "pulverizing harrows,"—and that is the very thing I am in doubt about. Do the disks pulverize as well as square steel, or iron teeth, drawn through the soil? Perhaps they do in some soils, and not in others; perhaps they do in all soils, but I doubt it. There is one argument in favor of their doing good work in this way, which can hardly be gainsayed—that is, they draw very hard—that is, most of them do. I am glad to know that there is one now made which, like the well known Geddes' harrow, and some others, by means of a flexible joint in the center, accommodates itself to inequalities of the soil.

Talks on Farm Crops.—No. 16.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

"I don't see," said the Doctor, "why you do not sow more Swede turnips."

"Because," said I, "Mangel-wurzels suit me better. Mangels are more nutritious than Ruta-bagas; can be made to yield a heavier crop; will keep later in the spring; do not impart any unpleasant flavor to the milk; can be sown earlier in the spring, and on a greater range of soils; are almost entirely free from attacks of insects and mildew, and, when once up, and fairly growing, will stand our hot dry weather far better than turnips."

"That is all true," said the Doctor, "but still the Ruta-baga or Swede-turnip has many qualities which ought to make it a favorite crop with you. Sometime ago, you made the remark that if you grew more cabbages than you could find a profitable market for, you had plenty of hungry customers at home that would consume all you had to spare. Your idea was to sell cabbages as long as the price would suit, and as soon as they were so cheap that it did not pay to market them, feed them out at home to your stock. That cabbages could be either sold or fed out was an argument in their favor. And, if so, then the same remarks will apply to Ruta-bagas. They often bring good prices in market. I have frequently paid 50 cents a bushel for them. And the books tell us that 1,000 bushels can be raised on an acre, and I have seen reports of crops of over 1,500 bushels per acre. Why, then, do you not raise them? Sell what you can find a market for, and feed out all you can not sell. Your mangels, of which you raise so many, can not be sold. There is no demand for them. They are good only for stock. They are not, like turnips, cabbages, carrots, parsnips, beets, etc., a table vegetable. If you raise Mangels you have only one string to your bow; with Rutabagas you have two; viz., sell when you get a fair price, and feed them when the market is glutted."

"I believe," said the Squire, "I will put in five or six acres of Ruta-bagas. They will pay far better than potatoes."

"That is so," said I, "provided you can get a good crop and sell them at a good price. But the probabilities are that you will not get a good crop."

"I would like to know why," exclaimed the Squire, "I have seen great crops of Swede turnips in Canada; our soil and climate are as good as theirs."

"True; and we can raise just as good turnips, but to do it we must adopt a better system of farming than is common in this neighborhood. Turnips require garden culture. The land must be dry, clean, rich, and mellow. Turnips require finer

tilth than beets. The seed is small, and will not grow unless deposited in nice, fine, moist, mellow soil. And at this season of the year, in our dry climate, such a seed-bed does not come by chance. We must make proper preparation for it. Instead of this, we sow turnips on land that we happen to have unoccupied. If too wet for oats, corn, or potatoes, we sow turnips, and hope for a good crop."

"Yes," said the Squire, "and I have raised a good crop of white turnips in this way that cost nothing but the seed and the pulling."

"I know it; and that is why I said you would probably not get a good crop of Swede turnips. A chance good crop is demoralizing. You hope to do the same thing again. It is a species of agricultural gambling. To raise a good crop of Swede turnips, you must give them a chance. If the season is so favorable that you can grow a crop with no preparation and little labor, there will be so many turnips in the country that they will bring little in market. It is a good crop in an unfavorable season that brings large profits."

"Let us hear how you would go to work to raise a big crop of Ruta-bagas?" said the Deacon.

"Select the best land on the farm—that in potatoes or corn last year, and plowed in the fall, would be good."

"Hold on a moment," said the Squire, "I have a piece of land that was in wheat, and seeded with clover, which failed. How would that answer?"

"If the clover failed because the land was wet, it would not answer at all."

"It is a bit of good land," said the Squire, "rather sandy and somewhat poor."

"Well, plow it up at once, and cultivate and harrow and work it until you get the sod, if there is any, all out top and torn all to pieces. The more you work it the better. Then draw on 15 loads of good, rotten manure per acre. Spread it, and harrow it thoroughly."

"But the harrow will pull it into heaps."

"If it does, spread them again, and keep on harrowing and spreading until the manure is broken up fine and mixed with the soil. It would be well to use a cultivator to more completely mix the manure with the soil and to break up all lumps. Harrow once more after the cultivator."

"And I suppose," said the Squire, with rather a sarcastic smile, "you would use the roller also?"

"Certainly, if there are any lumps, I would roll and harrow and cultivate until the land was as fine and mellow as a garden. Then plow once more, harrow and roll. Then mark out the land in rows from 2 feet to 2½ feet apart."

"Can not you be a little more definite," said the Squire. "If 2 feet is as good as 2½, why not say so?"

"It depends somewhat on the land, and still more on the kind of cultivator you use. If you have nothing better than a common corn cultivator, you had better make the rows 2½ or 3 feet apart, as the cultivator will be apt to smother the plants. But if you have a proper cultivator that will run within an inch of the young plants without throwing earth on to them, two feet is wide enough for the rows. But unless the soil is very rich, it is perhaps best to make the rows 2½ feet apart. It is less work to cultivate and hoe; and you will get larger bulbs than if sown thicker."

"What is the use of a marker," asked the Squire. "A good drill makes its own mark for the next row."

"It is not much work to mark out a few acres of land with a good one-horse marker, such as we use for marking out corn. If the land is as mellow as it should be, the teeth will make a good deep mark, two inches wide. And now I want to tell you something that is worth knowing—something which is of the first importance to the turnip grower—something which will often double the crop. In fact, I have repeatedly known it to make all the difference between success and failure. It is very important in England, but it is still more important here, owing to our dry weather and our increased liability to having the young turnip plants destroyed by the little black beetle."

"What is it?" said the Deacon. "If it will keep off the beetles I would like to know it."

"It will not keep off the beetles, but it will so stimulate the growth of the young plants that they

soon get out of danger. As soon as the plants get into 'rough leaf' the beetles do little damage. Mr. Lawes told me, thirty years ago, that if I would sow this article in the rows with the seed, he would insure me against damage from the beetle. Its effect on the growth of the young plants is marvellous.

"Its application here is comparatively new. Until within a year or two it was so high and so poor—or at least so uncertain, that a farmer could hardly afford to use it. But now we can buy it at reasonable rates, and no farmer who reads the *American Agriculturist* need be cheated. He can get a good article of guaranteed composition. I have used it for many years, and should have used it still more extensively if I had raised more turnips, and could have got a good article at anything like present prices. What we now want is a good drill that will sow this manure in the drill with the turnip seed. We have good drills that will sow it with wheat, and barley, and corn, but I do not know of a drill that will sow manure and turnip or onion seed at one operation. They have such drills in Canada, and possibly there may be such manufactured here, but I do not know of any."

"And until we have such a drill," said Charley, "it is necessary to use the marker."

"At any rate, we have not yet hit on any better plan on this farm. Mark out the rows 2½ feet apart, taking pains to have the rows not only straight, but deep and wide, and then go along the rows and carefully sow a little *superphosphate* in the mark. It is some work, and should be done by a careful man. It is a shame that we have no machine which will do it. But until we have it, we will pay, on a small scale, to do it by hand. The *superphosphate* should be previously run through a sieve, and all lumps broken fine. If damp, mix a bushel of plaster with three bushels of *superphosphate*, or if plaster is not cheap enough, use sifted coal ashes. Sow 200 lbs. to 300 lbs. of *superphosphate* per acre; then drill in the seed, running the drill along the mark where the *superphosphate* is sown. We use a hand garden drill, and sow 2 lbs. of seed per acre."

"One pound is enough," said the Deacon.

"Yes, and more than enough. A quarter of a pound per acre, will give all the plants needed, if they come up just where you want them, and the beetles let them alone. But all experience shows that it is well to sow turnips thick enough to insure a continuous string of young plants."

"If very thick," said Charley, "it will not do to let them grow much before hoeing, or they will all mat together, and be weak and spindling, and it is a good deal of work to single them out."

"You have just hit the nail right on the head. As soon as the rows can be distinguished, run a cultivator through them, and follow with the hand-hoe. It is quite a knack to hoe turnips properly and expeditiously. Our common hoes, while admirable for most purposes, are too broad, and slant too much towards you for singling out turnip plants. You want a hoe that you can push as well as pull. By heating the shank of the hoe, you can bend it out until it is nearly at right angles with the handle, or until it will push out the plants. The cultivator runs within 1 or 1½ inches of the plants, leaves very little work for the hoe, except to single them out. Strike the hoe through boldly, and this will probably leave a plant that will fall over towards the hoed space; if so, place the hoe between it and the other plants, and push out all the plants the entire width of the hoe, and cut the soil deeper and a little wider in bringing back the hoe towards you. This ought to leave another plant ready for singling out as before. A turnip plant has more roots than a beet or mangel-wurzel, and you can cut closer and deeper in hoeing turnips, than in hoeing beets or mangels. In hoeing beets, more or less of the singling out has to be done with the fingers, but turnips can be singled out with the hoe. It requires some patience and skill, and possibly some patience and faith. Hoeing turnips is like swimming—a boy who once learns the art never forgets it."

"In regard to the distance apart," said the Doctor, "I found, when I was in England, there was a tendency to thin out to a less distance apart than formerly. Those who prided themselves on growing very large roots, made the rows 2½ feet apart,

and thinned out the plants to 18 inches distant in the rows. But many farmers thought it better to have the rows two feet apart, and thin out to 12 inches in the rows. The roots are smaller, but they

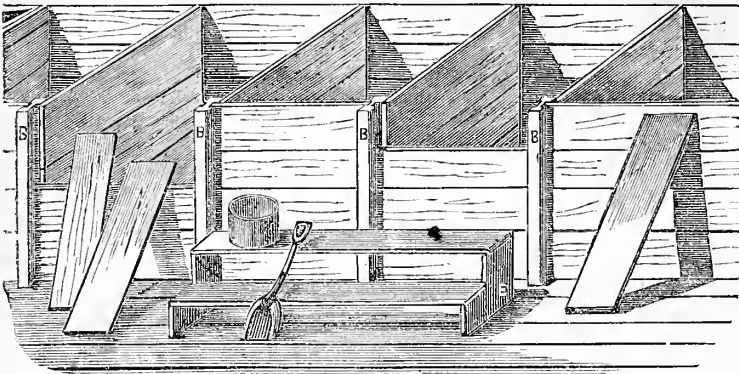


Fig. 1.—ARRANGEMENT OF BINS IN GRANARY.

think they are more nutritious. In the former case you have 11,616 turnips on an acre, and in the latter 21,780 turnips on an acre. If the former averaged 5 lbs. each, which is not by any means a large turnip, there would be 29 tons per acre; and in the latter case, if the bulbs weighed 2 lbs. each, there would be 21½ tons per acre. And it is thought that 20 tons of the small roots contain more nutriment than 30 tons of the large."

"In this country we are not at all likely to thin out too much. The prevailing error is in the other direction. It seems such a pity to cut out a dozen nice plants and leave only one, that I have hard work to persuade my men, when hoeing by the day, to use the hoe boldly. If hoeing by the acre, they would soon learn to thin out severely."

"Do you mean to say," said the Squire, "that you would leave only one plant to each 15 or 18 in."

"That is exactly it; or if you do not want large roots, leave one at every 10 or 12 inches. For later use, or if sown late, it is perhaps better to thin out to 10 inches apart. I once sowed Swede turnips as late as the 4th of July, and had a good crop, and of splendid quality for the table. For feeding to stock, it is, of course, better to sow earlier—as early in June as you may be able to get the land ready."

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

GRAIN BINS.—Without proper bins for grain, much that is hard earned in the field is easily wasted in the barn. The floor of a granary should be of doublehemlock boards one inch in thickness, dressed and tongued and grooved. Sometimes it may be desirable to lay a floor of plank, and cover this with a layer of hydraulic-lime cement three-quarters of an inch in thickness. Either of

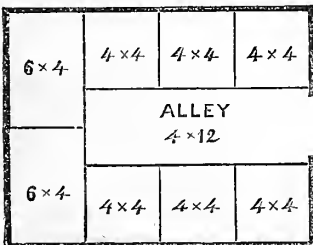


Fig. 2.—PLAN OF GRANARY.

Fig. 3.—SIMPLE BRUSH HARROW.

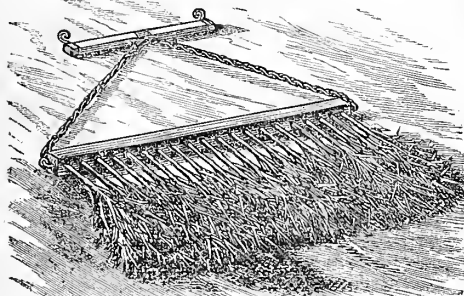


Fig. 3.—SIMPLE BRUSH HARROW.

These floors will be rat-proof. There should be a window in every granary, with fine wire gauze shades to exclude weevils and grain moths. Figure 2 is a

plan of a granary; figure 1 shows the mode of constructing the bins. The posts (*B, B,*) have grooves, into which the boards are slipped as the bins are filled, and they can be removed when not needed. The boards should be numbered, that they may always be properly placed. Portable steps (*E*) are very convenient when the bins are deep.

BRUSH HARROWS are cheap and useful for many purposes, such as leveling the surface of fields newly planted with corn, or potatoes; for mellowing the soil when it is crusted, and for covering light seeds. Figure 3 shows a very simple one, made of

a scantling (or a round pole) 9 feet long. Holes are bored 6 inches apart; small branches are inserted into these, and wedged tightly. Another method, seen in figure 4, is to place the brush between two planks, which are afterwards drawn

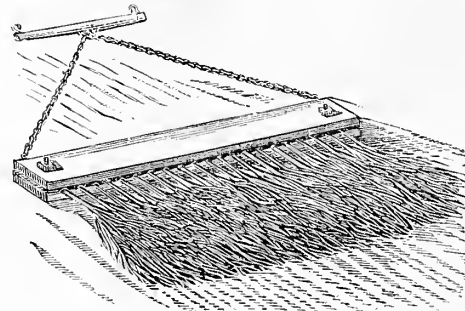


Fig. 4.—IMPROVED BRUSH HARROW

closely together with screw bolts. If it is desirable, a farmer may make a riding harrow by fastening bundles of brush to a long axle by means of wire, and affixing a seat to the axle (figure 5).

HAULING MANURE.—In Western New York, where some farmers haul out several hundred loads of

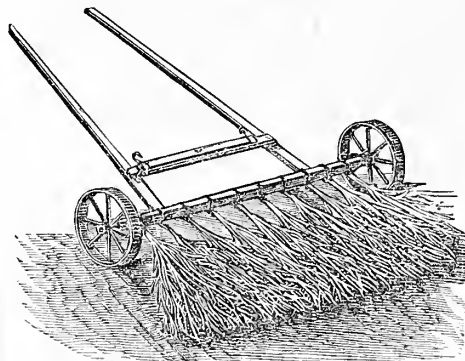


Fig. 5.—BRUSH HARROW WITH SEAT.

manure, the following plan is adopted. Two or three wagons are used, one being left in the yard to be loaded, while the other is drawn to the field and unloaded. Thus it is necessary that the unloading be done quickly. For this, the box is removed, and bottom planks (*W*, fig. 6,) with side-boards a foot wide, are provided, upon which cleats (*T, T,*) are nailed near each end to prevent splitting. A notch is cut out, as at *A*, that the board may be easily lifted from the wagon, as is shown in the engraving. With this arrangement of the wagon, one person can unload the manure, by removing the side-boards and pulling or pushing the load off in heaps upon each side with a manure hook.

STAKING A RAIL FENCE.—To stake a worm rail fence, proceed as follows: When the foundation is laid, and the fence is three rails high, stakes are to be driven in the angles close to the rails, and then fastened with a piece of annealed wire, as shown at figure 7. A few more rails are laid, and the stakes are again tied; and to finish the job, a wire should

be fastened above the top rail. In figure 8, the stakes are set and wired as the fence is built.

An English Milk Farm.

In the management of a milk dairy, the profit is made up of a number of very small items. A few of these small matters are sufficient to cast the balance upon the side of loss, instead of that of profit. It is, therefore, important that every detail in the

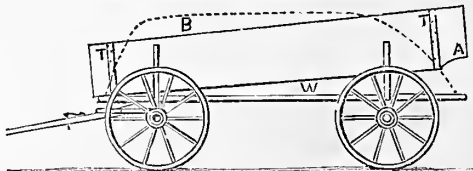


Fig. 6.—MANURE WAGON.

work of a milk farm should be carefully scrutinized. Only one-tenth of a cent per pound in the cost of the milk, in a year, amounts to three or four dollars per cow, and a loss or gain of one quart per cow, per day, will amount to ten dollars in the year. The objects to be gained in a milk dairy are: to keep the expenses as low as may be, and to increase the product as much as possible. Every thing tending to secure these objects, is valuable to the dairy farmer. There are few farms from the management of which we can learn so much as from some of the best conducted English milk farms. Generally the best milk farms in America are managed very much up-

on the same system, because there is no secret in selecting the best cows, or in choosing the best milk-producing food, but we do not make so much use of roots and oil-cakes as do the English farmers, and these are the cheapest and best milk producers. An outline of the management of an English dairy, which is of great interest, is given in the "London Live Stock Journal Almanac." This farm is in South Derbyshire, a limestone country, in which the grass forms the best and most nutritious pasture in the world, and with which none of our pastures can bear comparison. With this exception there is nothing in the system of which we can not avail ourselves if we wish. The cows are nearly all purchased when fresh, and sold off for fattening when failing in milk, but are not fattened on the farm. No calves are reared, except a few bred from the best milkers. The cows are well fed the year round, to keep up a regular and maximum supply of milk. In summer the feed is pasture, in the fall, the aftermath is fed, along with cabbages, until winter feeding begins. This consists of hay, brewer's grains, roots, cut straw, and 5 or 6 pounds

Fig. 7.—WIRING A FENCE.

of oil-cake, or corn-meal, per day. The roots (Swedes and Mangels) are pulped and mixed with the grains and the chaffed straw; 8 cents a bushel is paid for brewer's grains. Tares are sown in May for soiling, and if the grass is abundant, these are not fed, but are cured for winter feed. A large portion of the farm is arable, and only 40 cows are kept on the 300 acres. A large quantity of purchased food is used, but, as may be expected, very little of fertilizers is purchased. The advantage, upon milk farms, of this system of using artificial

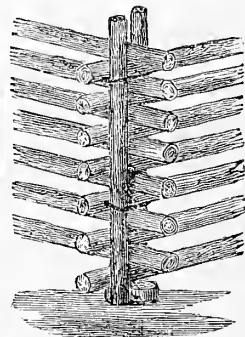


Fig. 8.—WIRING A FENCE.

only 40 cows are kept on the 300 acres. A large quantity of purchased food is used, but, as may be expected, very little of fertilizers is purchased. The advantage, upon milk farms, of this system of using artificial

foods of the richest character, is very great, because the larger portion of them is returned in the manure, and that which is carried off in the milk is quite inconsiderable. Thus a well managed milk farm does not deteriorate in fertility, but both it and its owner grow rich together. The consumption of milk is steadily increasing, and upon those farms from which there is easy access to the large cities, their production can, by good management, be made profitable, both in its immediate returns, and in the indirect addition to the value of the land.

Plan of Stables for a Small Place.

A plan for a small stable, to accommodate a cow and two horses, with poultry-house and pig-pen annexed, is often asked for and we give one. Figure 1 is the ground plan, 31 feet long, and 18 feet wide. The central part comprises two horse stalls, 5 x 10 feet, and a loose box for a cow, 7½ x 10 feet, with a passage, in which is a feed bin, room for a fodder-cutter and feed box, and stairs to the hay loft. Over the feed box is a hay-shoot from the loft above. The poultry-house adjoins the passage, from which two doors open into it. This house is 18 x 12 feet, and has a sloping front of glazed sash. The roosts are shown in the engraving by the three bars in each apartment. The poultry-house is divided into two parts, so that one can be appropriated for young chickens and brooding hens, which is a very convenient method, and avoids the loss of a single chick. At the other end is a yard for manure, with a pig-pen at the rear. There are two openings from the stable into this yard, for the purpose of cleaning out the manure. Figure 2 shows an elevation of the building. Generally a plain structure will be desired, but, if necessary, an ornamental roof may be made, and the building finished more elaborately than is here shown. The

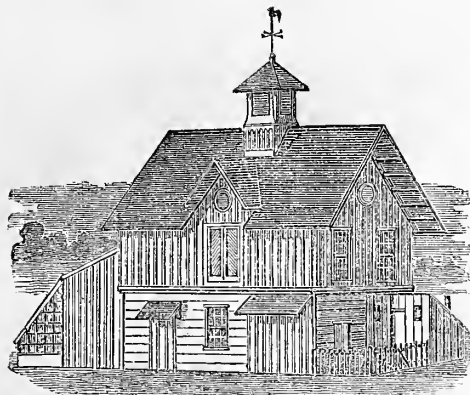


Fig. 1.—ELEVATION OF STABLE.

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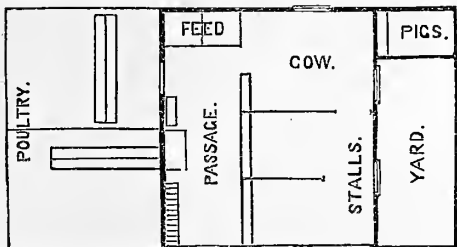


Fig. 2.—PLAN OF STABLE.

cost of this building may be from \$200 upwards, according to its style and the materials used.

An Injection Nozzle.

The common method of giving an injection to an animal, by means of a bladder, and a piece of elder wood, from which the pith has been removed, is sometimes injurious, and at the best is clumsy. A very neat instrument for the purpose has been



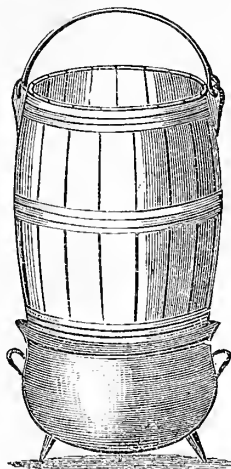
INJECTION NOZZLE.

devised by Whitman & Co., the makers of the Fountain Pump. This nozzle, shown in the accompanying illustration, is intended to be attached to

the Fountain Pump. The liquid to be injected is prepared and put into a pail, is administered in the ordinary manner, the nozzle being oiled or greased. For worms in horses the usual injections of salt and water, or those of warm water, or soapy water for inaction of the bowels, in either cows or horses, may thus be given with ease and safety.

A Simple Feed-Cooker.

"A Subscriber," sends us his method of cooking food for a few pigs, as follows. An ordinary iron kettle is provided, large enough to admit the chine of a meat barrel or tierce, and arranged with a fire-place beneath it. A number of holes are bored in the bottom of the barrel, and two strong rings are affixed to the sides. The barrel is placed upon the kettle, fitting closely inside the rim, and is filled with roots and meal. A close cover is fitted to the top, and the contents of the barrel are cooked by the steam from the kettle. The arrangement is shown in the accompanying engraving. The barrel may be lifted off when the feed is cooked, by means of a small crane and windlass, and placed upon a wheelbarrow to be carried where it is to be used.



FEED-COOKER.

Foot-Power Saws and Sawing.

For small work a hand or foot-power saw will often be found very useful. But unless a machine of this kind is kept in the very best order, the power needed to run it is so much increased that the work is too hard for either the hand or foot. Some re-

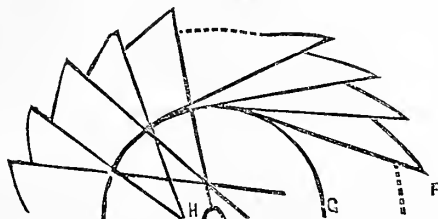


Fig. 1.—PROPER & IMPROPER PITCH OF SAW-TEETH.

marks in reference to the machine in question, and the proper method of keeping the saws in such order that they will work with ease, have been sent to us by A. I. Root, of Medina, Ohio, who has had considerable experience in the use of small wood-working machines. The sawing machine is shown at figure 6. It is furnished with a pair of feeding rolls and saws of different sizes. In using this saw, or in fact, any saw, it should be remembered that the points of the teeth only do the cutting, and that, to secure ease in working, the sides of the saw should not rub against the wood. The proper observance of this principle is the whole art of keeping a saw in order. The shape and disposal of the teeth should be such that the sharp points pare off a slice of the wood and cut an opening large enough to prevent friction upon the sides of the saw. There is a certain position in which the teeth make a smooth cut, otherwise the grain of the wood is torn and not cut, and a greater force is required to tear the fibers than to cut them smoothly. The proper and improper pitch of the teeth for a rip-saw are shown in figure 1. The center of the saw at H should bear a constant relation to the angle of each tooth, which should be on a line which is called a tangent from the circumference of the inner circle, shown at G. When a straight edge is laid against this circle, it should fall upon the under-

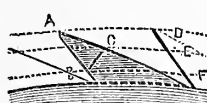


Fig. 2.—POOR TOOTH.

side of each tooth. Then if the distances between the points of the teeth are equal, they will all fall

side of each tooth. Then if the distances between the points of the teeth are equal, they will all fall



Fig. 3.—FILES FOR SAW.

exactly upon a line which would form the circumference of a circle concentric with the circle, G. On the other side of the diagram are some teeth which are wrong, but they are frequently seen as bad as in this specimen. A saw filed in this unequal manner will require more than double the power to drive it. When a hand or foot-power is used, the difference is sufficient to prevent the operation of the saw. For a cross-cut saw, the shape of the teeth is entirely different, but can not be considered at this time. In filing the teeth to get a sharp point, the work should all be done from the underside. If the teeth are filed at the top, much of the saw is wasted. The top is worn away in cutting the wood, and if the underside only is filed away in a proper manner, the body of the saw is cut away evenly and the circumference, shown at F, figure 1, is gradually carried towards the center until the teeth become too small, and the saw is worn out or used for smaller work. That the saw is wasted by bad filing, is shown at figure 2. By filing beneath the points of the tooth, first at A, D, would in the course of time be carried to C, E, but if filed from the top the points would in the same time be brought to B, F. It is clear if, in addition to the wear by work is added the loss by filing, that the saw will be worn out more rapidly

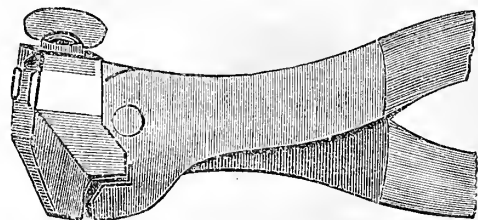


Fig. 4.—SELF-REGULATING SAW-SET.

than by work alone. For filing small saws, files of the shape, shown at figure 3, should be used. The angle of the file is precisely the same as that of the saw when the flat part rests upon the top of the tooth. In use it is never made to cut down, but only to preserve the shape and angles of the teeth. In



Fig. 5.—SET OF TEETH.

setting the saw only enough set should be given to clear the blade; and the set should be perfectly regular, or the work will be more difficult. A self-regulating set is shown at figure 4. The screw at

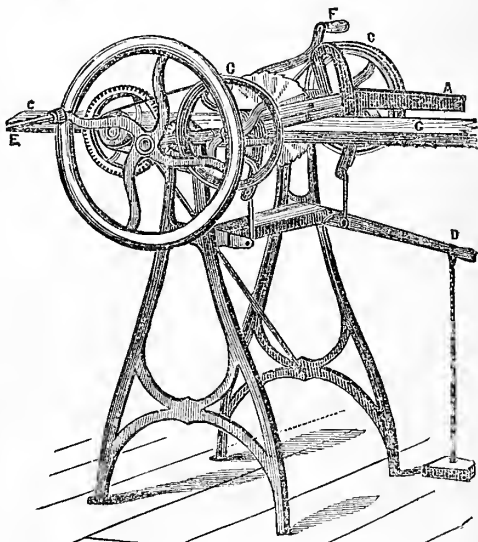


Fig. 6.—HAND-POWER SAWING-MACHINE.

the top gauges the hold upon the tooth, and by bringing the handles together every tooth is bent alike. The proper set is exhibited in figure 5, the

dotted lines showing how the teeth, *A, A*, are bent so as to be regular, and to give a certain amount of clearance for the saw. To make a small saw cut smoothly, the teeth should be finished off with an oilstone. These are made of all necessary shapes to trim out the angles and to level the points of the teeth. To smooth the edges of the teeth, lay an oilstone on the table against the saw, and turn the saw backward. For finishing fine work, small planing machines are made, one of which is shown at figure 7. These machines are made now at remarkably low prices, so that there is scarcely a workshop that can afford to be without them; while for such small work as the making of surplus honey and fruit boxes, and light crates, the hand-

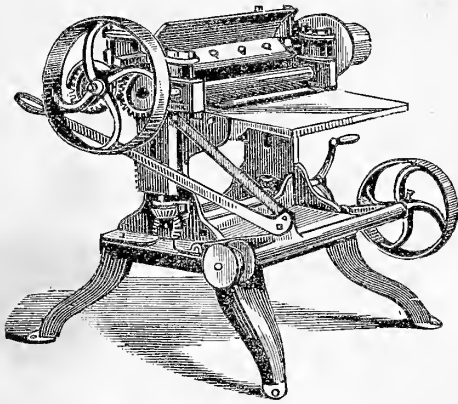
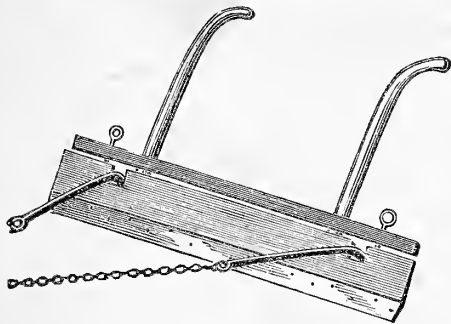


Fig. 7.—LILLIPUTIAN PLANER.

saw machines and planers are indispensable. But to use them with economy and satisfaction, the owners must know how to keep them in order.

A Road Scraper.

A light road scraper would be found very valuable on every farm for repairing the private roads. It may also be used, when necessary, for running over the public road in front of the farm. The appearance of the farm is greatly improved by the neat condition of the road in front of it, and as the



A USEFUL ROAD-SCRAPER.

road is actually the property of the owner of the land by which it passes, the public having only the right of using it for traveling, it is very proper that the real owner should keep it in good condition. A light, easily made scraper is shown in the accompanying illustration. It consists of a frame of stout timber, in which the scraper is pivoted. The scraper may be 4 or 8 feet wide, as it is to be drawn by one or two horses. It is raised or depressed by the handles attached behind. To run over the road for a few minutes with such an implement, after it has been cut up in bad weather, would save much repair at other times, and thus lighten the road taxes. If the use of a road scraper were general, the roads would be in much better order, and the beauty of the country would be much increased.

PORK PACKING IN THE WEST.—From the Cincinnati Annual Price Current Report, for which we are indebted to the Superintendent, Sidney Maxwell, Esq., we glean the following as to the quantity of hog products packed in the West the past year:

No. of Hogs packed.	Average net weight.	Yield of Lard.	Cost per cwt.
6,505,446	226.4 lbs.	38.61 lbs.	\$4.99

This gives a gain of 1,401,133 in the number of hogs

packed; of 10.12 lbs. in the average weight, and of 4.53 lbs. in the yield of lard, with a decrease of 19 cents in the cost per 100 lbs. 723,368 bbls. of pork were packed, an increase of 86,101 bbls. over last year. The above relates to the winter packing only. The total quantity packed, from March 1st, 1877, to March 1st, 1878, was 9,048,566 hogs. The winter product of lard was 761,192 tierces, of 300 pounds each, and of cured meats 980,000,000 lbs.

The Beet-Sugar Question.

A new mania seems to be imminent. Agricultural journals, and others not agricultural, are everywhere agitating the subject of beet-sugar, and deluding themselves and their readers into the belief that a great industry, heretofore neglected, is about to be introduced. Circulars are being spread abroad by public-spirited individuals, pointing out how easily sugar can be made from beets, at every cider mill and cheese factory; if only the beets are grown. It is all a great mistake. We can grow the beets

fast enough, and too fast, but the manufacture of the roots into sugar is a very intricate, chemical as well as mechanical, operation, requiring the greatest skill and costly machinery. The beet contains abundant salts which interfere with the process of crystallization of the sugar, unless they are got rid of by a careful operation; besides, upon some soils, the beets contain so much of these salts as to render their manufacture into sugar impossible. It would be well for farmers to give a very cautious hearing to those who try to induce them to take stock in beet-sugar factories, and to engage in growing beets for manufacture. To grow beets for sugar is quite a different thing from growing them for feeding. In the former case only small roots are desired, averaging $2\frac{1}{2}$ to 3 pounds, as these are richer in sugar than the larger ones. Only about 8 tons per acre of these small roots can be grown; the large crops of 30 or 40 tons, so much written about, are not for the sugar business. It is very certain that farmers can make more profit in growing heavy crops of sugar-beets for stock feeding, than light crops for sugar factories, if we had these. It may become a profitable business in time, but it must be remembered that the success of the manufacture in Europe, so much talked of, is the result of nearly a century of costly and persevering effort assisted very liberally by Government aid. It can hardly be supposed, that here, where labor is dear and private enterprise must work alone, we can make an immediate success. Pioneers generally fail, and others build upon the ruins of their fortunes. Still there are always sanguine individuals who are ready to make experiments, and it is possible that through their failures the way to succeed will be learned. At present, however, it is certain that the risk of loss in the manufacture is greater than the probability of gain.

An Orange Co. (N. Y.) Dairy Barn.

The accompanying engravings are to illustrate a milk-dairy barn, belonging to J. E. S. Gardner, of

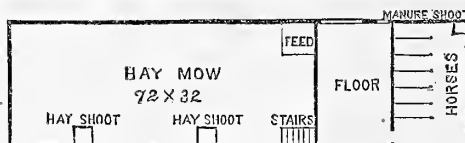


Fig. 1.—PLAN OF MAIN FLOOR.

Orange Co., N. Y. This barn is 110 feet long, 32 feet wide, 20 feet high, with a basement 9 feet high. The building is on a slope, facing west. In front is a pit for preserving brewery grains, 30 feet long,

9 deep, and 16 wide. The interior arrangements are very convenient; at figure 1 is shown the

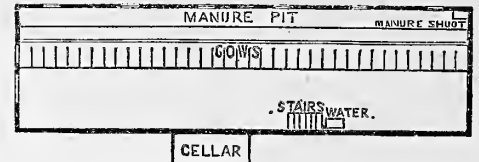


Fig. 2.—PLAN OF BASEMENT.

main floor. There are 6 horse-stalls, 16 feet long, with a manure-shoot in the corner, leading to the manure-pit in the basement beneath; a driving-

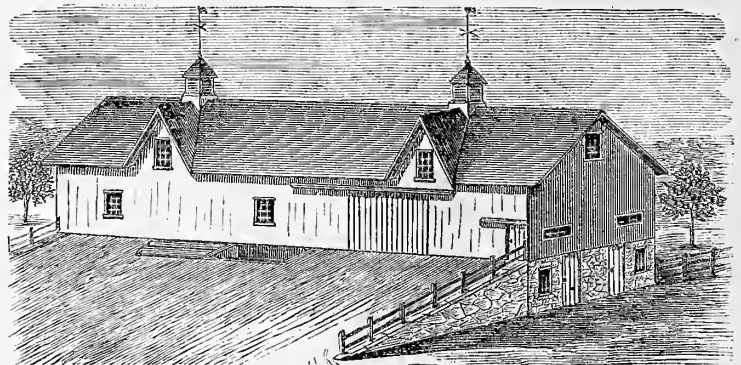


Fig. 3.—VIEW OF ORANGE COUNTY BARN.

floor, 20 feet wide, with stairs and feed-room; a hay-mow, 72 x 32 feet, with hay-shoots leading to the feeding-floor below. At fig. 2 is a plan of the basement, in which are 36 stanchions along the center, with doors at each end; in front of the cows is an alley for feeding, 16 feet wide, through which a wagon can be driven from end to end. Behind the stanchions is a standing platform for the cows, with a drop 15 inches wide, then a walk of 3 feet, and a manure-pit 7½ feet wide and 4 feet deep, with a cement floor. In the rear are several sliding-doors, one in each bent, for removing manure. The pit for grains is covered with railroad iron and flagging. A perspective view of the barn, showing its situation, is given in figure 3.

A Milk-house for Winter and Summer.

In response to several requests we give a method

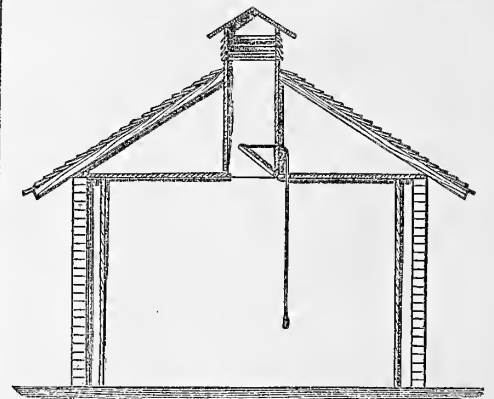


Fig. 1.—SECTION OF MILK-HOUSE.

of building a brick Milk-house, with an air-space in the walls to keep it cool in summer, and warm in winter. Figure 1 is a sectional drawing. The outside is of brick, laid lengthwise, so as to make the wall 4 inches thick; the corners are to be well bound together at each alternate row of bricks; the inner wall of lath and plaster is supported on 2 x 4-inch upright studs, or furring pieces, 16 inches apart from centers, placed edge-wise, to leave an air space of 4 inches. The laths are nailed upon these. The furring pieces rest upon the foundation of brick, bedded in cement, laid crosswise, to make an 8-inch bearing. The floor should be cov-

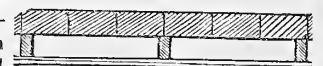


Fig. 2.—SECTION OF WALL.

ered with cement-concrete, 3 inches thick, level with the foundation, and a close base-board should be nailed over the plastering. Finish the plaster to the floor before nailing on the base. The studs are spiked to the beams overhead, which are laid 16 inches apart, and also to the rafters. This strengthens the building greatly, and allows the air-space of the walls to open into the roof. A ventilator, carried from the ceiling to the peak, as shown, is opened or closed by a trap-door, with a cord. The house may be 16 feet square, and 12 feet high in the clear, which will give ample room for ventilation and space for the milk of 50 to 100 cows. There should be only one window on the north side, shaded by a green blind, and kept closed. It would add greatly to the coolness of the house if the walls were covered on the outside with climbers, such as the Hop-vine, Wistaria, Virginia Creeper, or other quick-growing vines, or running roses may be used. In preference to any other roof, we would select one of red tiles, which are cooler than slate, and so absorbent that a light shower, or a slight drenching with water, with the Whitman Fountain Pump, upon a hot day, would cool the interior greatly. A section of the wall, fig. 2, shows the air-space.

A Useful Gate, not Patented.

"H. S. B." Bailey, Tenn., sends a sketch of a gate which may be made very useful for various purposes, such as separating small animals from

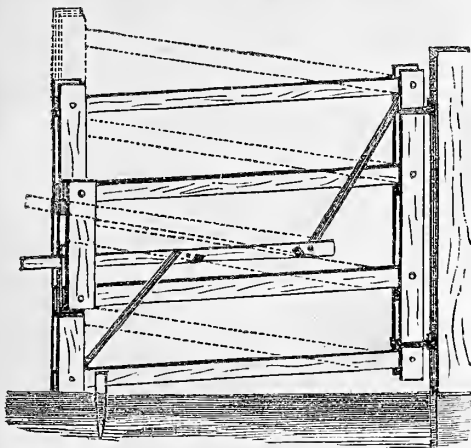


Fig. 1.—SELF-CLOSING GATE.

larger ones, and has the advantage that it will fasten itself when closed. The gate is made of strips one inch thick, and 3 or 4 inches wide, as shown at figure 1. The latch is fastened as shown,



by bands of hoop-iron riveted to the upper and lower corner. When the latch is lifted, the gate is raised, as shown by the dotted lines, and is held in this position by the latch resting upon a support shown at a, figure 2. In this position the gate is raised from the ground, so that small pigs or lambs may pass under, and it also swings clear of the peg driven into the ground to hold it when lowered. When the gate is swung to, and the latch strikes the post, the latch is moved from the support and drops, letting the gate down on to the ground. By driving pegs into the gate post, upon which the latch may rest, the gate may be raised to any desired height. The framework of the gate is fastened together by carriage bolts, screwed up loosely, so that the gate will work easily.

Hens and Ducks in the Fruit-yard.

Young chickens and ducklings will get a large part of their living from insects, if they have the opportunity. It is a good plan to give up the fruit-yard, or a part of the orchard, to poultry. Chickens and ducks want shade as well as sunshine, and thrive better for it during the summer. They are

always on the watch for worms and millers, and greedily devour every insect that falls from the trees. They are fond of fruit, and consume the windfalls, which harbor the insects that are so destructive to fruit. A brood of chickens left under an apple tree afflicted with Canker Worms or Caterpillars, will reduce the stock, and finally exterminate them. One of the most successful fruit-growers we are acquainted with, keeps poultry constantly under his trees. The apples and pears are fair, and he has paying crops every year.

The Value of Leached Ashes.

Experiments with leached ashes continue to work favorably, and to win friends, every year. There has been a large reduction in price to correspond with other fertilizers in the market. Formerly, they sold at 20 to 25 cts. a bushel, delivered at the landing, on tide water. Our farmers now get them at 17 cts., delivered at the same place, in quantities to suit purchasers. They have been used a great many years by the farmers and market gardeners of Long Island, and later by the same classes in the shore towns of Connecticut, and on the tobacco farms farther inland. The leached ashes used come mainly from Canada, and very largely through Oswego, whence they are shipped by canal boat without change until they are landed at the harbor near the farms where they are to be used. This refuse from the asheries contains considerable quantities of potash and phosphoric acid, which have a wonderful influence upon exhausted soils. We notice that when this fertilizer is once introduced, it retains its hold upon the confidence of cultivators, and they buy ashes every year, frequently increasing their orders. The onion-growers along the Sound make large use of leached ashes—buying sometimes by the thousand bushels. This is one of the best indications of its value for that crop. Fruit-growers are much pleased with its effect upon the growth of their trees and shrubs, and upon their productiveness. It improves the size and quality of all the small fruits. It is especially beneficial upon strawberries and grapes. The use of this fertilizer is gradually increasing among the farmers who are more remote from the harbors where the ashes are landed. Their effect is immediately visible upon old pastures and meadows, spread broadcast, as a top-dressing; but they act more satisfactorily if applied to the crops at the time of seeding down. They not only largely increase the crop with which the grass-seed is sown, but their influence is visible for many years afterwards in the increased yield of grass. A farmer who has used ashes freely for twenty years, upon a hard, worn granite soil, says they will give an increase of hay, upon a meadow newly stocked, for eight years, and then, if the field is plowed again, they will show the effect of the ashes for six years longer. He applies about 100 bushels to the acre on land that he designs to keep in meadow, and about 75 bushels to pasture land. It is particularly satisfactory as an application to the rye-crop—even in so small quantities as 20 bushels to the acre. He has reclaimed a large breadth of old fields given up to the growth of bushes, briars, and brakes, and made it a fine pasture by the rye-crop and ashes. He considers leached ashes his most efficient helper in transforming an exhausted, worn-out farm into one of great productiveness, giving a fair reward for his capital and labor.

CONNECTICUT.

A Sure Cure for Poultry Lice.

Lice are the great pest of the poultry house. Hens left to range about the farm or garden will keep clean by wallowing in the dry dust. But for a good part of the year villagers have to keep their hens in confinement, and very soon, without constant watchfulness, lice appear, and if the poultry house is near the barn, or within it, the vermin spread to the cow and horse-stables, and make trouble there. White-washing, if it were attended to every month, would be effectual, if the wash

penetrated all the cracks. But this involves a great deal of labor, and it is difficult to reach all the crevices. There is the same objection to sulphur and tobacco smoke. A few of the lice are generally left for seed after every smoking. The best remedy we have ever applied is crude petroleum, or, if more convenient, the common kerosene-oil used for lamps. This is always at hand, and a few minutes labor with the oil-can will rout the enemy. Generally one application is enough to destroy them. We apply it directly to the perches, pouring a continuous stream from the spout. The hens get this oil upon their feet and legs, and it is rubbed all over the feathers. It is penetrating, and the odor seems to be exceedingly offensive to all insects. We have had no lousy hens since the application of this remedy.

*

Use of Agricultural Papers.

I have been a constant reader of agricultural papers for thirty years and more, and have found the following benefits:—1. They are a most agreeable change from the labors of the field and the garden. Every man wants diversion of some kind, and finds it in change of occupation. Reading is amusement to a man tied up to the daily routine of the farm. His mind is stimulated by the perusal of the pages of his favorite journal, by its beautiful illustrations of animals, of flowers, and shrubs, of cottages and garden walks, of new implements, of husbandry, and by its records of the experiments of other practical farmers; he is refreshed and kept cheerful and contented by this constant communion with other tillers of the soil. 2. They add largely to our stores of knowledge. Some of the best minds in the country write habitually for these papers. Some of them have had years of training in the best scientific schools of this country and of Europe, and tell us how crops grow, what tillage does for our crops, what are the best rations for horses and working cattle, for fattening animals, and for milk cows; what fertilizers our soils need, and how this want can be most economically supplied. They are full of communications from practical farmers, in all parts of the land, giving their methods of husbandry, and the reasons for them. No man can read habitually these teachings without gaining much useful knowledge in his husbandry. 3. They save much waste upon the farm, in the purchase of seeds, fertilizers, stock, and tools. Seeds are often adulterated, sometimes with sand, but often with old seed, or seeds of weeds, which, if sown, greatly increase the cost of tillage and harvesting. The papers warn us of these adulterations, show us how to detect them, and where to purchase a pure article at fair prices. In the single item of fertilizers, any man who has occasion to use them gets back his subscription for a good agricultural paper, many times over every season. In the Connecticut Experiment Station, which is mainly a creation of agricultural journalism, there is a complete safeguard against fraudulent manures. A reading farmer can know just what he buys, and not invest in sand or swamp muck. Millions of dollars are saved to the country every year by this Institution. Manufacturers of fertilizers are compelled to sell by analysis. The best implements of tillage, and of harvesting, are brought to the knowledge of the mass of farmers through the press. If there is a fair, a plowing match, a trial of reapers or mowers, or of implements of tillage, the papers give the results in detail, and he has the data for an intelligent opinion. Inventors have shifted the burden of growing crops, and harvesting them very largely, from human hands to brute muscles. The horse cuts, cures, rakes, and stores the hay harvest. A good tool often pays for itself in a single season. The results of the large increase in the circulation of our agricultural papers are seen all over the land, in more attractive homes, in cleaner and more productive fields, in better orchards, in more abundant harvests, in a better fed, better clad, and better sheltered population. It is money in the pocket of every farmer to take an agricultural paper and read it.

CONNECTICUT.

The Ponds Suitable for Black Bass.

Numerous inquiries are received about fish ponds, especially ponds suitable for Black Bass. As these can be raised where trout can not be, the general expectation seems to be, that Black Bass will flourish in any horse-pond that does not entirely dry up in the summer. The natural habitation of this fish is the St. Lawrence basin, where it flourishes in the large lakes, and in the streams that feed them. Its favorite places of resort are upon rocky shores, and in the rough water at the foot of water-falls. It is a large, gamy fish, and wants plenty of room, and an abundance of live bait. It is an enormous feeder, and will hold its own in a well stocked lake against all other kinds of fish. It is the only fish we know of that will clear a pond of Pickerel. It requires gravel in some part of the water in which it is planted, for breeding purposes. It makes nests like the roach, in which to lay its eggs, and in the Northern States, spawns in May and June. If the gravel is not there as a natural deposit, it must be supplied artificially. Of course, all efforts to plant a fish of these habits in small, artificial ponds, stagnant during the summer, must be unsuccessful. A small pond of an acre or two, if fed by springs, or if a living stream, stocked with other fish, runs through it, may support a few Bass, and answer as an amusement. But to raise Bass for profit, we must have a large pond of twenty acres or more, or, in its absence, a stream large enough to furnish water-power for factories. These fish have been quite extensively transplanted in New England during the last twenty-five years, and the conditions of success are pretty well understood. They thrive almost uniformly in large ponds, and lakes at the head of streams, and when these become full of fish, they escape at the lower out-let and stock the streams below clear to tide-water.

The fishing not infrequently becomes better in the lower waters of the stream, than at the pond where they were planted, especially if the pond is small, shallow, or muddy. The fish, if left free, will find the breeding grounds, and conditions of life that suit them. They do best in large bodies of water, with rocky or gravelly bottom, and are in no haste to leave such localities. One or two hundred Black Bass put into such a pond or lake, will multiply rapidly, and furnish good hook fishing perpetually after the fourth year. The earliest ponds stocked in Connecticut were, Waramang Lake, in New Preston, Long Lake, at Winsted, Pocatapang, at East Hampton, and the reservoir pond at Bolton. This last pond has stocked the Willimantic, the Shetucket, and Quinebang, below, and Black Bass are frequently taken in the Shad seines near tide-water, at Greenville. Judging from this experience of pisciculturists, it is idle to plant Black Bass in small ponds of an acre or two, near the homestead.

The best thing, for one who is fond of the rod and fly, to do, is to unite with his neighbors of similar tastes, and stock the nearest lake or river where there is abundant room for Bass. It should not lessen their pleasure, to know that at the same time they are increasing the food supply of their neighbors.

CONNECTICUT.

firmest leather only, should be used. A thick belt is not always stronger than a thin one, the quality of the leather is the most important factor in the strength of the belt. The best belts are cut from the center of the hide. A belt may be made to run five years by careful use, that would otherwise be ruined in one year. A belt should run free and

easy; tight belts are soonest worn out, and they cause the bearings of the shafting to heat and wear very quickly. The lace-holes of belts, are oftener torn out by having the belts too tight, than by weakness of the leather. The lace-holes should be made with an oval punch, the length of the hole being parallel with the length of the belt. The lacing of a belt should begin at the middle, and each side should be drawn up with equal tightness. The ends should be cut exactly square, and the lines of holes parallel with the ends; the crossing of the laces should never be on the pulley side of the belt. No other manner of connecting the ends of the belts is so good as lacing; this is elastic, and runs without noise or jar over the pulleys. The friction of a belt is twice as much on wood as on iron. If the pulleys are covered with leather, the belts may be run much slacker than otherwise, and they will last one-fourth longer. When a belt slips, the inner surface should be sprinkled with a mixture of Spanish white (fine whiting) and rosin, finely powdered. If a belt becomes smeared with oil or grease, it should be coated with fuller's-earth, and the inside scraped with a sharp-edged wooden blade. Soft wood is better for pulleys than hard wood; for round belts pear-wood wheels are the best. Tighteners should only be applied to the slack side of the belt. If pulleys are a long distance apart, it will be better to have a loose pulley placed midway, and use two belts rather than have so much sag in one long belt, as this causes a flapping motion and bears too heavily on the journals. When a journal heats, it may best be cooled by placing an endless belt of flannel as near as



IBERIAN IRIS.—(*Iris Iberica*).—See "Notes from the Pines," page 222.

How to Use Driving Belts on Machines.

Now that machinery and farm engines are coming into general use, a few hints as to the best methods of choosing and working belts will be useful. There are good and bad belts, although respectable makers of belts choose the best material and manufacture it in the best manner. A good leather belt, one inch wide, should lift 1,000 lbs.; if it breaks under this strain, it is imperfect. A good belt should last at least three years, if it is protected, as it should be, from moisture. A belt that is made to run on the flesh side; will, with care, outlast four of five belts run exclusively on the hair side, providing the flesh side is stuffed with tanner's dubbing. Soft and pliable belts have three times the adhesiveness, and consequently the power, of hard stiff ones. For dry, warm places, soft, coarse leather will do good service; but for moist or damp places, the finest grained and the

possible to the heated part, and causing the lower bight of the belt to run in a vessel of cold water.

Pulleys should always be a little wider than the belt. When a belt runs over one side of a pulley, that side of the pulley is higher than the other, or the belt is shorter on that side. When a belt becomes mouldy from neglect, it should be well rubbed with a dry cloth, and then with pyroligneous acid; this acid will prevent mouldiness on belts that are used in damp places. If the laces are gnawed by rats or mice, they should be soaked in castor oil mixed with an equal quantity of tallow; no vermin will meddle with leather that has been dressed with castor oil. When a belt is found to slip, the slip will be on the larger pulley, and not on the smaller one. No belt should ever run under a tension of over 300 pounds per inch of section. Never attempt to put a belt upon a pulley while it is in motion. All these rules, except where the contrary is obvious, apply equally to rubber belts.

The Irises—The Netted Iris.

Many flowers fail of appreciation because of the ease with which they can be produced, and their abundance. Take some of our common garden Irises, for example; their flowers for variety in color and beauty of texture, are really exquisite,

tary, and of the form shown in the engraving, which is about the natural size. The color of the flowers is an indescribably rich blue, relieved by a blotch of golden yellow, the two making a contrast that is most charming; added to this beauty of color we have that of fragrance, which has been compared to that of violets, but seems to us, while equally spring-like, quite peculiar. Messrs. W. & Co. in-

figured in Oct. 1871), and a few others. Recently, through the discoveries of travelers, especially in Western Asia, the number of tulips has been considerably increased, and there are now some 50 recognized species. Within a few years European cultivators have manifested much interest in the species of tulips, and some of them are of great beauty, of the gorgeous type, while others are



THE NETTED IRIS.—(*Iris reticulata*.)



GREIG'S TULIP.—(*Tulipa Greigi*.)

but they are cheap, a large plant can be bought for 25 cents, which will give dozens of blooms, and then being perfectly hardy, it requires no care whatever. Yet examine the individual flowers, and in all that constitutes beauty, they are quite equal to some of the rare plants, such as some Orchids, the plant of which costs \$10 to start with, and which must be grown with the greatest care. Then some of the less common Irises, such as the Iberian, and the Netted, may be treated as common greenhouse or window plants, and their beauty enjoyed in advance of their time for blooming in the open air, and give the real lover of plants, often a person of moderate means, an opportunity to enjoy as much of floral beauty as can those whose wealth allows them to command the most costly of Orchids and other rare plants. By no means would we discourage the culture of Orchids and such plants, for we wish that more persons of wealth would engage in it, but we would point out to those with slender purses, that there is within their reach quite as much of intrinsic beauty as the wealthy can command. We were led to these remarks by a pot of the Netted Iris (*Iris reticulata*) sent to us this spring by Woolson & Co., Passaic, N. J., growers of hardy plants, to show us how well it forced in a common cool greenhouse. This species, about which there has been considerable confusion of names, is a native of the Crimea; it belongs to the section with bulbous roots, and has very long, narrow, and pale-green, four-sided leaves. The flowers are soli-

form us that this Iris is quite hardy with them, but being an exceedingly early bloomer, coming with the crocuses, or a little later, it may be caught by the late frosts. It forces with the greatest ease; if plants are potted in the fall, and kept in a cool cellar, or in a common frame, they may be brought to a sunny window, where they will soon come into bloom, and give pleasure not only by their rich color, but by their charming fragrance.

Species of Tulip—Greig's Tulip.

No flowers make the garden so gay in spring with brilliant glow as the Tulips, with their crimson, scarlet, orange, yellow, and other positive colors. The dealers make two principal classes, the Dwarf or Early, and the Late or Show Tulips; aside from these they have a small class of Double varieties, which for a mass of brilliant color can hardly be equalled, and the quaint, odd Parrot tulips.

The Early or dwarf varieties, including the popular *Duc Van Thol*, are derived from *Tulipa suaveolens*, of Southern Europe. The Late, Show, or Florists' tulips, have *T. Gesneriana* of Russia for their parent; the Doubles and Parrots are supposed to be crosses of these and other species. Our catalogues occasionally offer a few, not more than half a dozen all told, of distinct species, such as *Tulipa cornuta*, *T. Gesneriana*, the typical form of the Show tulip (both of these, with Parrot tulip, we

equally attractive for the delicacy of both form and color, and these plants are likely to become popular in the spring garden. The most striking of these recent introductions is Greig's Tulip, *Tulipa Greigi*, so named in honor of General Greig, President of the "Imperial Russian Horticultural Union," discovered a few years ago in Turkistan. We received, a few years ago, from the remarkable collection of Herr Max Leichtlin, of Baden Baden, Germany, a bulb of this, which has been exposed for two winters without protection, and fully confirms M. Leichtlin's account of its great hardiness, according to whom, it, when its leaves are half grown, endures a temperature of zero without injury. This specimen allows us to present an engraving, which, as we can not show color as well as form, fails to give the great brilliancy of both flower and foliage. The leaves of this are beautiful in themselves, being of a glaucous green, abundantly and distinctly blotched with rich purplish brown. The flower, which is broadly goblet-shaped, is from four to six inches in diameter; the general color is of the most vivid orange scarlet; at the base of the flower is a broad blotch, as near black as we ever find in flowers, which is bordered by a clearly defined margin of bright yellow. These colors produce a most brilliant effect, and combined with the lasting character of its bloom, will make it much sought after. Such plants are of comparatively slow increase, and it will no doubt be some few years before this tulip will be generally offered by dealers. We are occa-

sionally obliged to inform our readers that we have no plants for sale. New subscribers, not knowing this, often write for plants which we illustrate and describe; we do this, as a matter of horticultural news. In this case, we have one of the very few bulbs of the country. We may say, as to the plants illustrated and described in our pages, if the plant is not in general cultivation, we mention the particular dealer who furnished us with the specimen; if this is not given, it may be assumed that it is to be had generally of the dealers in such articles.

One Grape Vine.

THIRD ARTICLE.

In the previous two articles we have endeavored to show the manner in which a vine grows, and illustrated it by the growth of a newly planted vine, which should always, the first year, be restricted to a single shoot. We here briefly recapitulate these points, as it is important to impress them thoroughly upon the mind of the grower. We have shown that this shoot is but a repetition of the same parts—a length of stem, a swollen place, or node, at which is produced on one side a leaf, and on the other side a tendril—or a cluster of blossoms, followed by fruit. Stem, leaf, tendril (or cluster), in succession. These are all the parts on the little vine of the present season's growth, and all that there is on any vine of the growth of many years. At the axils of the leaves on the main shoot, are produced laterals, or side shoots, but these are but repetitions of the main shoot, a section of stem, a leaf and tendril, and these repeated as long as the vine continues to grow. If the vine is an old one, no matter how old, each shoot that has started this spring, will be found to be exactly like that from the newly planted vine, except at its few (3 or 4) lower nodes, instead of tendrils there will be clusters. An old vine, especially if it has been neglected, appears confusing, but examine it carefully; all that will be found is the wood of former years, which has ripened and become hard, and from this spring new shoots, precisely like those we have described. It is necessary to say a word more

About the Laterals.

When the leaf upon the shoot is well developed, there will be found at the base of its petiole (or leaf-stalk) two buds, as shown in figure 3, last month. Only one of these will start and push out a shoot, the lateral. This will be, as already stated, a repetition of the shoot from which it springs; if allowed to grow, it will take away from the nourishment of that shoot, and besides, make a profusion of needless stems and leaves. Many years ago, before the matter was well understood, it was ad-



PINCHING THE LATERALS.

vised to pull out this lateral altogether—a great mistake. If this lateral were allowed to grow, the other bud would remain dormant, and be ready for next year's growth and fruit, but if it were pulled out altogether, then the other bud would start, to the great injury of next year's fruiting of the vine. Here was a necessity for a compromise, the growing lateral must be kept within bounds, and yet not so

much checked as to cause the other bud to start. This, as briefly stated last month, is accomplished by pinching. As soon as the lateral has made two or three leaves, pinch out all but the lower one; a bud from the axil of this lower leaf will soon start, and when this has two or three leaves, again pinch out all but the lower one; if there is another start—there will be rarely more than three—pinch again. The engraving, from Fuller's excellent "Grape Culturist" (which every grape grower should have), shows this clearly. At *f* is the lateral, which has been pinched once at *a*; this has made a second start, and now needs to be pinched at *b*, and so on. We say "pinched," because at the proper time for the work, the shoots are all succulent, and the work can be done with the thumb and finger, and much more rapidly than would be supposed from the description. This is to be done on the newly planted vine in order to get as strong a main shoot as possible; it is done on the old vine to control the growth, and secure strong buds for next year's fruiting. In directing the setting of the vine in April, a stake about 6 feet high was advised; the vine, as it grows, is to be kept tied to this, but not too tightly, and when it reaches the top, let it sway about at will. A vine thus supported has no need of tendrils, and they may be pinched off when quite young and tender; in a short time they become tough and wiry; this is not important, but it saves the trouble of cutting them away at the fall pruning. The insects that will attack the young vine now, are usually large beetles and caterpillars, which should be sought for and hand-picked, as it is desirable to have every leaf whole and healthy. Examine the underside of the leaves frequently, and if, especially in a hot, moist time, slight grayish patches are found here, or on the young shoot, it is mildew, and must be checked by a free dusting of sulphur, blown from a bellows.

Notes from the Pines.

A friend kindly reminds me that "The Pines" have not been heard from thus far this year. Had I undertaken a monthly series, I should apologize, but I may as well say, for his benefit and that of our many new readers, that these notes are given when it is more convenient, and more economical of space, to condense a number of matters by writing in the first person than it is to make separate articles under the editorial "we." After the unusual winter—really for once, at the East, at least, the winter has been unusual—I expected to find more or less damage had been done. When a winter is so very mild as the last was, plants are not fairly dormant; they are in an excitable state, and when a cold snap does come (and we had several last winter comparatively cold), injury is likely to result. This spring has shown but little damage of this sort, but that was where I should least expect it,

Among the Blackberries.

The "Dorchester" badly killed; "Wilson's Early" less so, while "Kittatinny," always the hardiest, is here and there killed back for some distance. On the first, scarcely a cane is alive. The Raspberries, too, seem to be somewhat injured. But as I have made a new raspberry plantation to replace the old one, the loss is of little consequence. I have a number of peach-trees that are of southern origin, and these varieties are rarely, on this account, even tried so far north as this, yet every one of them escaped harm, and came out in full bloom.... I think that I mentioned last spring, that, after many vain trials with seeds that would not grow, I started

A Bed of Sea Kale,

by importing the roots, and was at last able to enjoy a vegetable so popular in England. When looking after it early this spring, I found that, in the hurry of fall work, the covering of manure to the bed had been omitted, and worse than that, the plants had been originally set so near the surface that the crowns had been injured and were decaying. This was a sad disappointment, but I had the roots dug up—enormous roots they were; the decay was confined to the crowns, and all sound be-

low. These roots were cut into four-inch pieces, and put into the sand of a propagating bench. It was surprising to see how freely they formed buds and roots, and there was soon Sea Kale enough to make a large plantation. On the whole, I do not regret the mishap, as no doubt I should have been unwilling to sacrifice this spring's crop from a few stools, in order to propagate a larger quantity of a plant that is very acceptable in early spring, before asparagus comes, and which may be had very early by a little forcing, by covering the beds with hot manure. There are many who regard

The Wild Dandelion,

as gathered from the meadows and road-sides, as the most acceptable of spring "greens." It has a rather pronounced bitterness, which, to some, suggests medicinal qualities, and it is eaten by them with a notion that it is "healthy," which I have no doubt the Dandelion generally is, but whether it is *healthful* or not, I never cared to inquire. Having, like Japhet (or was it Jacob?), studied the "rudimans" over a mortar and pestle, I have always preferred my food and medicine on different dishes, and have sternly insisted that tomatoes were not, as alleged, medicinal, for if they were, I would not eat them.—But this is a digression.—To all who like dandelions, let me advise them to cultivate them. Sow "Vilmorin's Improved" at once, and give them about 18 inches apart each way, or in two-foot rows, a foot apart in the row. Next spring there will be dandelions, each one of which will be as large as half a dozen wild ones, and a "mess" can be cut in five minutes that it would take a boy—allowing for a boy's digressions—half a day to hunt up here and there. Then as to quality there is no comparison; grown in a manured soil, and not having to struggle with the grass, they are vastly more tender, while the often too distinct bitterness of the wild plant is subdued to a remarkable degree, and is really acceptable—though I trust not "healthy." Several years ago you illustrated the

"Common Moss Pink,"

Phlox subulata, which, in its ordinary pink form, is one of the plants met with in old gardens, but like many other good old things, is now less frequently planted than its merits warrant. The white variety (in European catalogues, under the incorrect name *Phlox nivea*, and also *P. Nelsoni*) is more rare, and more striking. Getting a bit of it some years ago, we went on dividing it from year to year, thinking so good a thing would be wanted for exchanges, and found last year that we had a large lot on hand. Not wishing to throw so good a thing away, it was put—of all places—in the vegetable garden, a row 200 feet long. This spring it had formed a bed some three feet wide, and of the above named length, and it was "a sight to behold." Seen from a little distance in the sun, it out-dazzled a snow-bank for brilliant whiteness, while by one standing close to it, could not see a leaf for the continuous sheet of flowers. Let those interested in cemetery planting make a note of the *White Moss Pink*.... Several years ago I had one of the first plants of

Iberian Iris, *Iris Iberica*,

that were brought to this country; when it bloomed I had a drawing of it made for "Hearth and Home," judging from my single plant, I thought that the European illustrations of the same were needlessly exaggerated. The flower, as it was, seemed to me fine enough and large enough, without going beyond nature. The original plant has now grown into a large, well-established clump, and its flowers this spring out-do in size any of the European cuts that I thought so much beyond the truth. If you still have that engraving, I wish you would publish it [see page 220.—ED.], that it may make this strangely beautiful, and perfectly hardy, plant better known. It is no exaggeration to say that some of the flowers are twice as large as that from which the engraving was taken, which shows that hardy plants are only seen at their best when thoroughly established. The upper, erect, divisions of the flower are nearly pure white, with occasional veins, while the lower ones are thickly lined with a peculiar purplish-brown, and each with a large purple spot, so dark that it is well-nigh black. Then the whole flower

has a peculiar crape-like texture that is most pleasing. The low stature of the foliage, not over 6 inches, with the enormous size of the flower, make it an admirable plant, whether for the early spring border, or for forcing.....Was there ever such

A Show of Fruit Blossoms

as now? Whatever may have happened to the peach trees just south of us, about here—12 miles from New York—the country is all a gay garden. Old orchards, fit only for fire-wood and breeding-grounds for the Tent-caterpillar, are “things of beauty and a joy for”—a week. Apples, pears, plums, cherries, and the few peaches, all, like Sophy Squeer’s sensibilities, are in “full blow.” The abundant blooming is not confined to fruit-trees, but the ornamental flowering shrubs appear to participate in the profuse inflorescence. The only exception to this, so far as I have noticed, is the Forsythias—sometimes called “Golden-bell,” usually one of the most free as well as one of our earliest spring shrubs; this made the poorest show I can recollect. For an early shrub, of rather low growth,

Thunberg’s Spiræa, *Spiræa Thunbergii*,

is to be especially commended; it grows 3 or 4 feet high, and has a most graceful form; its flowers are like very minute roses, of the purest white; these are produced in clusters of three, all over the bush, and make each slender, curving branch a garland of itself. When out of flower, the foliage is pleasing, the leaves being small and of a light green. It flowers in April, and earlier than any other Spiræa with which I am acquainted. All these qualities combine to make this Spiræa one of the best.... What a pity that the bloom of the

Double-Flowering Fruit Trees,

such as the double peaches, cherries, etc., is of such short duration. They are of great beauty while they last, but one does not care to give room, for a whole year, to a tree that gives returns for only a week, or less. I have a scarlet, double peach, the finest thing of the kind I have seen, that makes a grand show for a few days, but it already takes up too much room.

The Fruiting of Wistaria.

I notice that an English journal quotes our friend Thomas Meehan, of the “Gardeners’ Monthly,” as authority for the statement that the Chinese Wistaria fruits only when trained as a pillar, and that when allowed to ramble at will, this vine is always barren. This is such a strange statement, that I think Mr. Meehan must have been misquoted. In recalling the fruiting Wistarias that I have known, I find that they have been among the most neglected. I pass one almost daily, which rambles over a veranda, and up to a roof, which probably never felt the touch of a knife, much less was trained to a pillar, or to anything else, yet it hung so full of pods that I called the attention of a seed-dealer to it, and he obtained the stock.

GARDEN THIEVES.—No kind of robbery is more annoying than that of plants and fruit. In most parts of this country, the taking of flowers and fruit is not looked upon as actual robbery, and unless there is a special law, as there is in some States, the depredator can only be prosecuted for “trespass,” and the prosecutor has to establish the fact that a certain amount of damage in money, has been sustained. One may have a flower which is to him of a value that can not be expressed in money, or his tree may for the first time bear a single pear, worth to the owner more than a bushel of similar fruit in the market, yet the matter-of-fact judge, will charge the matter-of-fact jury to find damages to the market value of the articles “trespassed” upon. In a recent suit in England, two scamps, who had stolen Snowdrops and other bulbs from a garden, were sentenced to seven years of penal servitude each. A most sensible judge was on the bench, who, finding that the thieves had before served three and eighteen months for similar offences, and were not cured, concluded that it was of no use to be lenient with them, but gave them seven years each! “Most worthy judge!”

THE HOUSEHOLD.

For other Household Items see “Basket” pages.

Home Topics.

BY FAITH ROCHESTER.

Combinations of Flavors.

A friend who has availed herself of unusual facilities for studying French cookery, has given me some of the results of her inquiries and experiments. In Professor Blot’s book we were told to use a “sprig” of this and a “pinch” of that, with an indefiniteness quite puzzling to the inexperienced. I have seen recipes for flavoring, which were poor guides for beginners, or indeed for most housekeepers, because the proportions were all given in ounces and fractions of an ounce. One wishing to follow them, and having no scales, might possibly buy the exact quantities separately and mix them afterwards. But my friend has it all reduced to teaspoonfuls and tablespoonfuls, of the medium size, and made just level full. She says her preparations are those recommended by the most celebrated French cooks, only they give them by weight, and she has made them easier for our use by reducing them to level spoonfuls. A larger or smaller amount may be made at one time by doubling or halving the proportions. Perhaps it is best to begin with a small quantity.

The *American Agriculturist* gave, a while ago, directions for drying and preserving various sweet herbs, as powders, kept covered in bottles or cans. Powdered herbs and ground spices are those used in these flavoring combinations, and after mixing, they should be kept from the air in the same manner. They are used in soups, stews, hashes, etc.

Flavoring Mixture for Soups.

Four tablespoonfuls each of Parsley, Sweet Marjoram, Winter Savory, Lemon Thyme, Sweet Basil; all dried and rubbed to a coarse powder; also one tablespoonful each of Thyme, and Bay Leaf; one teaspoonful, each, of Marjoram and Rosemary.

Flavoring for Meat Hash and Force-meat.

One tablespoonful each of Black Pepper, Cayenne Pepper; two tablespoonfuls each of Cloves, and of Nutmeg. Keep this mixture dry and closed from the air. In using it, take about the proportion of one part of this flavoring mixture to four parts of Salt—a tablespoonful of the spiced salt for each pound of chopped meat.

Keeping Meat in Hot Weather.

Great is the convenience of a good refrigerator! But many of us, who live in the country, have to get along without such a convenience. Farmers’ families, who often depend upon the butcher’s meat-cart for supplies of fresh meat, are annoyed by the bother and the waste that comes of getting more beef or mutton on hand than they can conveniently use up before it becomes tainted. The most foolish waste, is to eat more of it than you need, with the idea of “saving it;” the doctor’s bill that may result from over-loading the digestive organs is not so good a show of economy, as the fresh eggs you might coax from the hens by feeding them any excess of meat. The meat should first be wiped clean and dry. Some sprinkle it well in all parts with salt. Others use black pepper plentifully (washing and wiping it well before using it to remove the pepper or salt), and then hang it in the coolest place possible—some in the well, others in a cellar. Perhaps the best precaution is to wrap it in a dry cloth, and cover it with charcoal-dust. Some say that wood ashes will answer about as well as charcoal, but I only know the virtues of charcoal by experience. I have found that charcoal will even remove a slight degree of taint. I am told that mutton is improved, as well as preserved, for a short time, by wrapping it in a cloth wet with vinegar, and laying it on the bottom of a dry cellar. All kinds of meat, including fish and fowl, may be preserved in brine for a longer or shorter time.

Drawing Lessons at Home.

A lady in Washington Territory writes me, asking some advice about teaching her children to draw.

She says they live in the midst of beautiful scenery, and they want to hang pictures of it somewhere besides on “Memory’s walls.” Prof. Huxley thinks that every child who is to be good for anything in art or science, or in anything, except the merest drudgery, ought to learn to draw; not to make fine pictures, perhaps, but to be able to sketch with some degree of exactness and quickness. He says that this requires no especial talent, for anybody who can learn to write can learn to draw. I think he is right. I think, too, that a knowledge of drawing adds much to one’s happiness through life, even if the art is seldom practised, in enabling us better to appreciate the beauties of Nature in all her forms. But I must be practical. The Kindergarten method is, to practise straight lines for a considerable time, beginning with half-inch lines, and making them gradually longer, first vertical lines, then horizontal, then oblique. This is intended for young children between three and seven years of age. It is good practice at any age, but I should never confine a child to it if it is found to be dull or tiresome. All careful practice with pen or pencil helps toward drawing. Train the fingers to careful copying, and the eye to exact measurements and comparisons. But if a child wants to make pictures, let it begin at once to copy them. It is well to use the common drawing-cards if one can get them conveniently, but any simple, well-printed pictures will do. There are plenty of them in the Little Readers, and other school books; and in such papers as the *American Agriculturist*, the cuts are very clear and beautiful. But little should be attempted at first—just a dog’s head, or a small bird, or a tree. Only one pencil is necessary at first, and of course the best is the best, but use whatever you can get, if Faber’s drawing pencils are not within reach. The best number for a single pencil is Faber’s 3. If the scenery is so charming that the children want to attempt copying it at once, let them try. They will probably see too much, or too great a diversity of detail, covering too large a picture. Teach them to cut out little pictures from the large landscape before them—a single rock with the weeds growing about it, or a solitary tree, or clump of trees. If they try this before they have copied considerable, they should often examine good engravings to see how the strong points are brought out, how different kinds of foliage are reproduced, and to learn what there is unsatisfactory in their own attempts.

An Improvement in Family Circulars.

A year or two ago I described the latest and best invention then known, for promoting sociability among scattered members of a family—the family circular, regular in its rounds, and without apparent beginning or end. One member sends it to another, and that one to the next in order, this one to the next, and so on. As it goes around in regular order, each one adds a fresh letter of his own, and taking out the letter of the one to whom he sends the budget; so that no one gets his own letters back again, but each one gets fresh news from all of the others at each round. In the Yankee family where this idea originated, they now have a new wrinkle. It is this: Each one is supplied with the same kind of paper, having a margin next to the fold; this margin is left blank. Then the letters taken out are preserved and bound in volumes to be handed down in the family. As Thomas always sends the budget to Richard, and Richard to Henry, of course Thomas keeps all of Richard’s letters, and Richard keeps Henry’s. This was proposed for adoption in our family, but one member protests that her letters are so flat, stale, and unprofitable, that she does not want them preserved. I fancy that the bright-eyed boy, whose baby antics are so lovingly chronicled in those letters, might, some years hence, differ with her opinion of the letters which drop out into my desk month after month. When I was in my teens, I spent many afternoons in my father’s garret, rummaging an old barrel of family letters, written half a century before, which seemed to me the most interesting reading I could find. A member of our “family circle” sends me in the last circular the following recipe.

Scalloped Veal.

The rule is the same as for scalloped oysters, and

may be used for cooking any kind of cold meat, and when crackers can not conveniently be had, a good dish may be made of it, by substituting bread crumbs for cracker crumbs. Put a layer of Cracker Crumbs in the bottom of a pudding dish. Wet this with Milk. Cover with a layer of finely chopped Roast Veal. Season the Meat with Salt and Pepper (and other flavoring if you choose), and scatter bits of Butter over it. Then put a layer of Cracker Crumbs wet with Milk, another of Seasoned Meat, and so on alternately, finishing with a layer of Crackers, mixed with a Beaten Egg. Cover, and place it in the oven for about half an hour. Then remove the cover, and allow it to bake a nice brown. This recipe is highly recommended as an excellent way for warming over almost any kind of cold meat.

A sister, who makes doughnuts (I never do), offers me the following recipe for

Raised Doughnuts.

One pint of New Milk, four teaspoonfuls of Sugar, one half cup of Yeast, and a little Salt. Stir thick with Flour, and let it rise over night. In the morning add as little Flour as will make the dough thick enough to roll out about an inch thick. Cut in squares of an inch and a half. As you drop them into the hot fat, stretch them out longer, and fry them thoroughly. They are (said to be) excellent with coffee for breakfast. Lard and suet, in equal proportions, *boiling hot*, is said to be better for frying cakes than either alone.

Ginger-Snaps.

Boil together one pint of Molasses (Sorghum is excellent for this), one teacup of Shortening (some consider Beef Suet the "snappiest"), a pinch of Salt, a tablespoonful of Ginger. Let it *really boil* for about two minutes, then set aside to cool. When cool, add two level teaspoonfuls of Soda, and beat all together thoroughly. Add Flour to make a dough as soft as you can roll out very thin. Cut into shapes, and bake in an oven not too hot, as they scorch very easily.

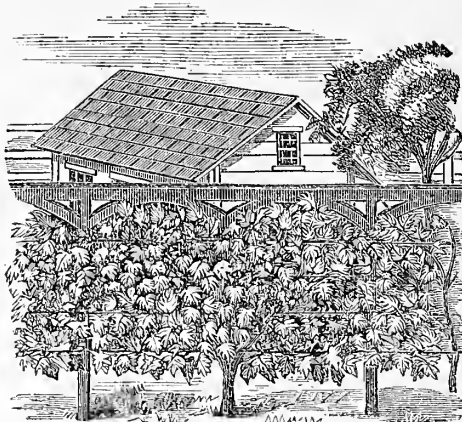
Care of Children's Feet.

I sympathize much with country-bred children in their scorn of the notions of city-bred children about going bare-foot in warm summer weather. "It will make the feet grow large!" Thus the little feet, that ought to grow in proportion as the rest of the body grows, are kept in shoes that fit as snugly as possible, hence when the body reaches maturity it is really deformed, because the little feet dressed in "number two," are not proportioned to the figure of medium height and weight. The Chinese plan is the same, only more so. The use of tight corsets is on the same principle of false art. So is the flat-board used by the "Flat-head" Indians to "improve" the natural shape of the head. I am making no plea now for undressed feet, but I would protest against tight shoes for anybody—least of all for growing children. I know of children who have corns on their feet in consequence of this abuse. Children should not wear shoes that hurt them. A little girl, who turns in her toes when walking, acquired the habit by wearing, when three years old, a shoe that so hurt her that she could only walk easily by turning in her toes. Corns on the bottom of the feet are often caused by shoes with protruding pegs, or hard buaches in the thread or leather, which press into the sole of the foot.

A Screen at the House.

It is especially the case in sparsely settled portions of the country, that the house is placed quite near the public road. This is done to avoid a sense of loneliness, and to allow the inmates a glimpse of the few passers by, that they may not feel quite isolated. It generally happens that this advantage, as it is regarded, is offset by the exposure of the rear of the house, the back-door, and the back-door yard, to the gaze of all who pass, and it becomes desirable to shut off this view of the premises by a screen, which is necessary also, to allow the inmates to pass to the dairy-house, wood-shed, or other out-buildings, unobserved. Houses, where it can be afforded, are often provided with screens of lattice-work,

of two-inch slats, crossing one another, with a hot-board below, and cornice above, which are invariably painted white, while the lattice itself is green. Such a screen, while well enough in a village, is quite too artificial and conspicuous for a country home. The best screen for the country, whether for shutting out the view, or for the shel-



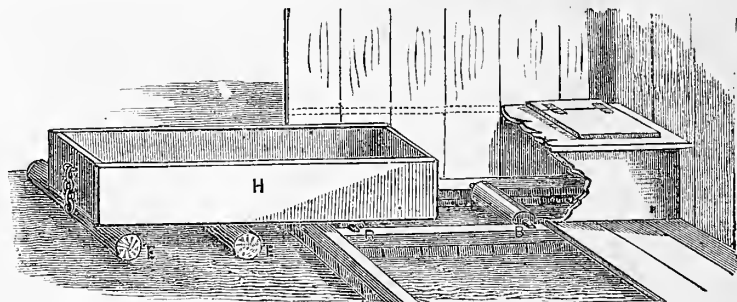
SCREEN FOR A BACK YARD.

ter it affords, is a living one of evergreen trees. This, however, can not be had at once—time is required to produce it, and while this is growing some other may be supplied. Mr. L. D. Snook, of Yates Co., N. Y., sends us a design for a screen, which may be used as a permanent one, or to serve until one of evergreens has reached high enough to take its place. This, shown in the engraving, has posts, 7 or 8 feet high, which are connected by a cap-piece of boards, cut as there shown, and strands of galvanized iron wire (No. 12 or 14), are passed from post to post, every 12 or 18 inches, according to the kind of plant to be used. One of the best plants for such a screen is a rampant growing grape-vine, such as the "Clinton," or "Taylor," and until this gets established, some annuals, such as Morning-glories, or such quick-growing plants as the Maderia-vine may be used.

A Warning to Every Housekeeper—

Including husband as well as wife—is the account published last month (page 169) of the deaths, at Newport, R. I., of six persons in a family of eight, all occurring in rapid succession. The important portion of this account, is the almost absolute tracing of this mortality to its cause—utter and shocking neglect to remove the wastes of the bodies of those eight persons. Here, in the famed city of Newport—the resort of wealthy pleasure seekers, and the permanent residence of a community widely known for its intelligence and refinement—was a state of affairs which could not be found in the poorest "huddle" of holes and huts, that answers for houses to the lowest of all our tribes of savages, the Digger Indians. This condition was not due to poverty, but, let us hope, to ignorance rather than indifference. There are some subjects that we would prefer not to write upon, but when, as in this case, it is one not only involving health, but life, we feel it a duty to our readers, to call things by their plain names, and to ask them to put aside all squeamishness, while we beg them to look to the condition of their closets and privy-vaults. There are occasional exceptions, but we know that, take the country through, outside of villages and cities, where there is public provision for carrying off fecal matters, this is the one weak point in our domestic arrangements, and a disgrace to our civilization. Several years ago we made a carriage

journey of several days, with a party of well known pomologists, through one of the most noted fruit-growing districts in the country. A region not only famed for the variety and excellence of its fruits, and the beauty of its rural scenery, but also for the refinement and hospitality of its people. Everything conspired to make the visit in all respects most charming—save one. A large share of our enjoyment was neutralized by the horrid condition of the outbuildings—a few at private places were bad enough, but those at the three or four hotels where we were guests, were of a kind and in a condition which need not be described. Were some enemy to human health, comfort, and decency, to offer a prize for the very worst affair of this kind that human ingenuity could devise, we are quite sure that one of these hotels would win it, though the competition among themselves would be close. We do not mention this fruit-growing district as exceptionally bad, but as an instance of a neglect of sanitary matters in a community where we should least expect to find it. If such can occur in the very oldest settlements of generally well-to-do people, we may expect newer localities, where men are struggling to make a home, to be even worse. Diphtheria, as in the Newport case, is a disease less frequently traced to such causes than Typhoid, and other low forms of fever, Scarlet-fever, etc. That *any* disease can originate from neglect of the out-building, should alarm the whole community. We frequently read in the papers, that "the funeral was attended by the most substantial and influential citizens from miles around," and that "the sermon was most impressive, and well calculated to comfort the afflicted family," but these, and similar obituary notices, are often quite incomplete for the lack of the statement—"the privy-vault and sink-drain remain as heretofore." It is probable that there would be less of this neglect, were it not that the subject is commonly regarded as *taboo*—one not to be mentioned. "Water-closet" is tolerated, but "privy" shocks many very nice people, who will hear absolute profanity without protest. In this case we do not mean "water-closets," but *privies*, and we say that, take them throughout the country, from top to bottom, shore to shore, they are a disgrace to a people called "civilized," not only in the matter of decency and comfort, but in the vastly more important one of health; and when we hear of certain deaths as "mysterious dispensations of Providence," we feel that it would be much more to the point to call them "God's protest against the violation of His natural laws"—laws which many brutes observe more closely than do many men. The ex-



CHANGING A COMMON VAULT TO AN EARTH-CLOSET.

istence of this danger is absolutely inexcusable, as it can be avoided, almost without trouble and without cost. Now, before weather becomes settled at mid-summer heat, every common privy should be substituted by, or converted into, an "Earth-Closet."

Dry Earth, not Sand,

but good loamy soil, the stiffer the better, and perfectly dry, is all that is needed to destroy every offensive odor, and every unhealthful emanation. Earth-Closets, or "Commodore," are very convenient, and are commended to those who can afford them. They may be placed in any out-building, in any vacant closet or other room in the house, and for invalids and delicate persons, are the greatest imaginable comfort. But to secure all the benefits of dry earth, these are not necessary. An Earth-

Closet consists of a receptacle to hold the deposit, a place to hold dry earth, and a mechanical contrivance that, by pulling a handle, will allow a portion of dry earth to fall upon and cover the deposit. Now a soap box will answer to hold the deposit, another soap box will hold the dry earth, and a scoop (an empty fruit-can, if nothing better), will answer in place of the machinery for dropping the earth. These articles, if bought, need not cost 25 cents; but they, or something that will serve, may be picked up on almost any farm. Having these, if one can not arrange them with reference to a seat, in a convenient manner, he must be quite lacking in tact. This outfit will be quite as efficacious as the most costly "Commode" ever made, in every respect, save one—some persons will be so indifferent, lazy, or obstinate, that they will neglect to apply the earth. This is a matter which must be insisted upon. A contrivance of this kind may be put in a place partitioned off in the wood-shed or other building, and one should also be made at the barn for the farm hands. If the receptacle is small, it should be made the business of some one to empty it daily, throwing the contents upon the manure heap. Several inquire whether the "night-soil" is not thus injured for use as manure. Not perceptibly, if placed upon the manure heap; it is only when it has been kept mixed with dry earth for a long time, and in a dry place, that it is dissipated. But this is of not the least consequence. The value of the night-soil, of a whole family for all time, is not to be offset against a single fit of sickness, to say nothing of a death. Many will find it convenient to convert their present out-building into an earth-closet, and as a hint to this end we give the engraving preceding, from a drawing by our correspondent, Mr. L. D. Snook, Yates Co., N. Y. The old vault is to be first filled up, and the building may stand in its original location, or elsewhere, as may be most convenient. As, when properly managed, no odor whatever is given off, the structure may be placed as near the house as desirable. In the engraving a portion of the house is removed to show the arrangement of the interior. A strongly made box is provided, of such a size as will pass easily under the seats. Two joists are laid down to support wooden rollers, with iron pins for journals, upon which the box may run, and if large, the box should have ring-bolts, to allow a horse to be hitched to it when carried away to be emptied, in which case it is well to provide it with runners. If not too heavy, it may be moved by two men, with the aid of loose rollers. The engraving sufficiently explains itself.

Gathering the Dry Earth.

In a dry spell, scrape up the dry surface earth, from the garden or plowed field, or use road dust if not sandy. By capillary attraction the surface earth is never completely dry. Harrow a space thoroughly, and throw the dry surface earth upon a platform of boards laid down for the purpose. The hot sun will soon make it completely dry; cart it in before night-fall, or if it must be left over night, cover it from the dew with boards or other material. Store in a dry place. It is well to collect enough to last a year, and pass it through a screen to remove stones and lumps. One more point to be remembered. Coal ashes are quite as efficient an absorbent as dry earth, and may be conveniently used, especially in winter. Finally, let the master of the house (or the mistress) insist upon two things—that the scoop and dry earth shall be used, and that no slops of any kind shall be poured into the receptacle. Chamber slops are of sufficient value for it to pay to carry them daily to the manure heap.

Household Recipes.

The following come from housekeepers of experience and judgment, who have thoroughly tested and approve them.

"BOSTON" BROWN BREAD.—One pint each of Indian and Rye Meal; $\frac{1}{2}$ cup of Molasses; $\frac{1}{2}$ pint Milk or Water; 1 teaspoonful Soda; 1 teaspoonful Salt. Steam three hours, and then place in the oven and bake until well browned.

GIRSY PUDDING.—Cut stale sponge-cake into thin slices, spread them with currant jelly or preserves, put two pieces together like sandwiches. Fill a dish with these; make a soft custard, pour over the cake while hot, and let cool before serving.

POP-OVERS.—1 pt. Flour; 1 pt. Milk; 2 Eggs. Eggs beaten to a froth, mix quickly, and bake in hot buttered cups. Serve with hot sauce.

COFFEE CAKE.—One cup very strong Coffee; 1 cup Butter; 2 cups brown Sugar; 3 Eggs; $\frac{1}{2}$ pint Flour; $\frac{1}{2}$ teaspoonful "Royal Baking Powder," (or $\frac{1}{2}$ teaspoonful of Soda, and 1 do. of C. Tartar); 1 cup stoned Raisins; $\frac{1}{2}$ cup chopped Citron; 1 teaspoonful of Nutmeg, and one of Alspice; $\frac{1}{2}$ cup of sweet Milk. This will make two good-sized loaves.

CITRON CAKE.— $\frac{1}{2}$ cup Butter; 2 cups Sugar; 6 Eggs; 1 teaspoonful "Royal Baking Powder," (or $\frac{1}{2}$ teaspoonful of Soda, and $\frac{1}{2}$ do. Cream of Tartar); $\frac{1}{2}$ pint Flour; 1 cup Citron, cut in thin slices. Rub the butter and sugar to a smooth cream, add the eggs two at a time, beating 5 minutes between each addition. Sift the flour and baking powder, add it to the butter and sugar, with the citron.

CRULLERS.—1 quart Flour; $\frac{1}{2}$ cup Lard and Butter in equal parts; 1 cup Sugar; $\frac{1}{2}$ teaspoonful of "Baking Powder" (or Soda $\frac{1}{2}$ teaspoonful, Cream Tartar 1 teaspoonful); $\frac{1}{2}$ pint Milk; 2 Eggs. Flavor with Nutmeg. Sift flour, sugar, and powder together, rub in the lard and butter, and add the beaten eggs and milk. Mix to a dough and fry.

WASHINGTON CAKE.—St. Louis, 1780.—2 cups of Butter; 3 cups Sugar; 4 cups Flour; 2 teaspoonfuls of "Royal Baking Powder"; 5 Eggs; 1 cup Milk; 1 cup Stoned Raisins; $\frac{1}{2}$ cup Currants; $\frac{1}{2}$ cup chopped Citron. Flavor with Nutmeg and Cinnamon, one teaspoonful each.

SPONGE-CAKE.—6 Eggs; 3 cups powdered Sugar; 4 cups sifted Flour; 1 teaspoonful Soda; 2 of C. Tartar; 1 cup cold Water, a pinch of Salt.

BOYS & GIRLS' COLUMNS.

The Young Microscopist's Club.

Now that you have learned to notice little matters, you will see many things that you have passed by without even a thought. On the leaves of various trees, and other plants, you will often find swellings, and sometimes they will be "broken out" as if they had a bad skin-disease. While some of these are mere irregular swellings, others are singularly regular and some quite beautiful. These are really galls, as those swellings on plants, caused by an insect within them, are called. The "Oak-Apples," which almost every youngster knows, are very large galls, caused by various little gall-flies.

These Leaf-Galls

are sometimes produced by a small mite, sometimes a plant louse, or one of the two-winged or four-winged flies.

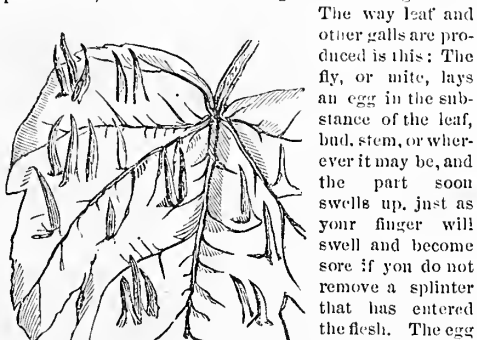


Fig. 1.—"NAIL-GALLS" ON LEAF.

upon this nest that the swelling makes for it; in time the creature makes its growth, and comes out in its perfect state, like the parent that laid the egg. You will find

On the Grape-Vine,

almost anywhere, one or more kinds of leaf-galls. What is very curious, the galls produced by the eggs of different insects, mites, etc., will cause the leaf to form—on the very same plant, galls quite unlike in appearance; indeed you might tell them apart by feeling them only. Figure 1 shows a bit of a grape-vine leaf, with what are called "Nail Galls." One of these is shown cut open, with the larva inside, in figure 2; this, when ready,

would come out a little gnat-like fly. In figure 3 is a bit of another grape-leaf, with pretty scolloped galls, the



Fig. 2.

Fig. 3.—PHYLLOXERA GALLS.

work of a louse, that minute, but very destructive creature which you must have read of.

The Dreaded Phylloxera,

which has quite ruined some of the vineyards of Europe. There are two "types," or styles, of this louse, one of which—the most injurious—attacks the roots of the vine, and this one which attacks only the leaves. I have been asked to say something about

"The" Hen Louse.

Unfortunately for the fowls, I can't describe "the" Hen Louse, for there are so many of them—half a dozen or more. Here is a portrait, figure 4, of one of the easiest to find, as it is one of the largest, being nearly a line or $\frac{1}{12}$ -inch long. Unless special care is taken, little chicks, when they are first hatched, are sadly afflicted; and the feathers on the head are all alive with them. It is well to remember that lard or oil will kill them. Not only common fowls, but all other domestic birds, including the delicate pets, such as the canary, and the wild birds from the largest to the smallest, are infested by parasites—as animals and plants that live upon other animals and plants are called. When any unusual birds are shot, it is well to examine them for these. Lice are true insects, but mites are also found on birds.

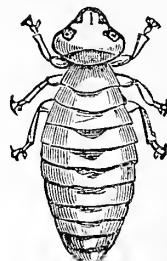


Fig. 4.—HEN-LOUSE.

If you have house-plants in a warm dry room, the leaves of such plants as Camellias may become brownish, and the leaves of more delicate plants may appear blotched, and begin to drop. And after searching for the cause, if you take some leaves and go to an experienced gardener, he will very likely say, after a glance at the leaves,

"Pooh, Red-Spider, My Young Friend."

You go home and look for spiders, and find none. In hot summer days, when it is dry as well as hot, the leaves of the pear-tree, so bright and fresh but awhile ago, become brownish and look in a bad way, and some one who knows about trees is asked to tell what is the matter. He will very likely say, "Ah, Red-Spider—you have it bad."—You look all around and find no "Red," or any other spiders. You will be told that the Lindens and some other shade trees, have "The Red-Spider." If you are much among gardeners you will learn from their talk that this "Red-Spider" is an important fellow, and wonder why, with all the mischief that is charged upon it, you do not find this remarkable "Red-Spider." There are several reasons, the principal being that

It is Not Usually "Red," and is Not a "Spider."

these joined to the fact that it is so very small as to be barely visible, are good reasons why you failed to find it. So much is said of it by gardeners that persons who do not know it, expect to see some large creature. It is not a proper spider. The spiders have their abdomen, or belly portion, joined to the body proper by a narrow portion (like a waist), but this insect is in one piece; hence is classed as a mite, and belongs to the spinning mites, as it makes a web finer than that of any spider. Then they are of different colors on different plants, and at different ages, and are greenish, brown, rust-colored, and sometimes bright red; for this reason the name is misleading. When full-grown, this mite is about half a line (or $\frac{1}{24}$ of an inch) long, but they are usually much

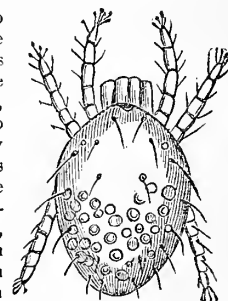


Fig. 5.—RED SPIDER—YOUNG.

smaller. They are found mostly on the under sides of the leaves, where they spin a web of wonderful fineness, beneath which they live, feeding on the juices of the leaves, and breed in a warm and dry place with great rapidity. So small are they, and so often some other color than red, that those who do not know what to look for, fail to see them, and the little pests go on with their destructive work. Our Microscope will show them very plainly. Figure 5 is a young and imperfect male Red Spider, with only six legs; figure 6 gives the perfect and full-grown male, with eight legs, and two very strong projections, or jaws, at the head. The perfect female is about the shape of figure 5, but has eight very hairy legs.

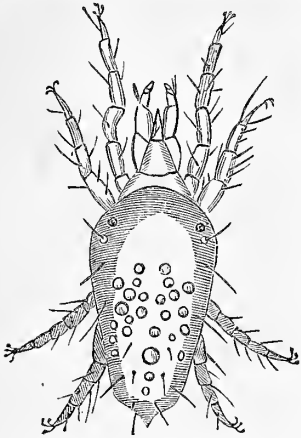


Fig. 6.—RED SPIDER—PERFECT.

How to Kill the Red-Spider.

It does not like water, and in greenhouses where the air can be kept moist, and the leaves often showered, it does not make much headway, but in a dry and hot room the leaves must be lightly sprinkled with sulphur.

Using the Diaphragm.

You will remember that we advised not to use the Diaphragm ordinary—that is, the little plate with a hole in it—but to turn it outside the glasses. But when you wish to examine a small point only, as an insect's foot, turn in the diaphragm, adjust the focal distance of the lenses from the object carefully, and then, with a proper light, it will bring out very small things wonderfully plain—even things you would not notice in looking through the glasses ordinarily.... Among the many insect objects none have more general interest than the

Foot of the Common House Fly,

which is shown in figure 7, rather larger than you will be able to see it with our Microscope, although you can make out the parts very clearly with that. Besides a pair of strong claws, the foot has two broad plates, which are thickly covered with minute hairs. It is well known that the fly can walk upon smooth glass, and can also walk on the ceiling with its body down; it has been stated that its feet are provided with something that acts like a boy's sneaker, that allows it to hold itself in these positions, but it is now found that these little hairs on the feet give out

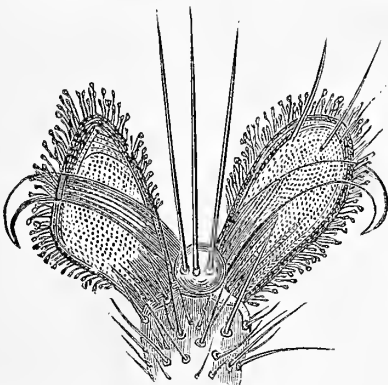


Fig. 7.—FLY'S FOOT.

a sticky matter, and that this mainly, if not wholly, enables it to walk on smooth surfaces and upside down.

The Mouth Parts of the Honey Bee

form another interesting object, but it will require some care to lay it out properly. It is generally supposed that the bee draws up its honey from flowers by means of a snicker, such as the moths and butterflies have; but this is not the case, they have no proboscis proper, but a kind of very long tongue, and they take up the juices by lapping. In figure 8 the long dark portion in the center (A) is the "tongue" (as it is generally called, though it is really a long lip). This is not a tube, but solid and closely covered with short hairs, and can be extended to considerable length. Each side of this is a lip (B), the two forming a case for the "tongue;" outside of these are two long jaws (C), and outside of these two shorter jaws (D). When not in use, these parts can be contracted, and drawn in and occupy but little space.

The Eyes of Many Insects

are exceedingly beautiful, especially those related to the bees and flies. Not having a bee or any such insect at

hand, I have borrowed a picture of a bee's eyes (fig. 9) to show you what to look for. These eyes are called

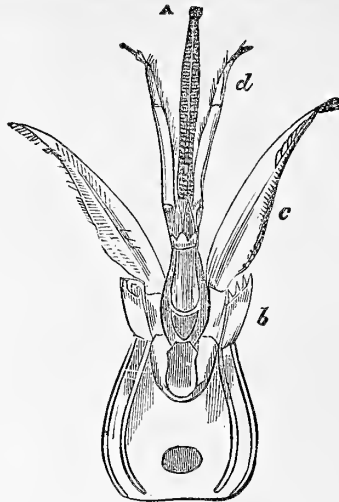


Fig. 8.—BEE'S TONGUE.

"compound eyes," being made up of a great number of minute separate eyes, or "ocelli." In the engraving the right-hand eye is entire, while that on the left-hand has a portion of the ocelli removed, and some of them placed singly to show their shape. I am not sure that you can see these so plainly in the bee, but I know that you can in the Dragon flies, or "Darning Needles,"

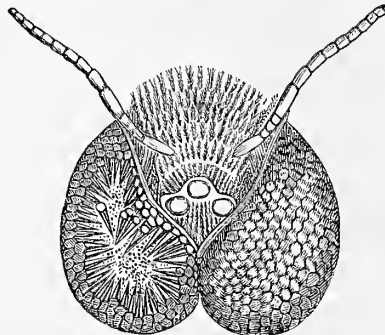


Fig. 9.—EYES OF A BEE.

which will soon be abundant, and which, by the way, contrary to the popular notion, are quite harmless. The number of these "ocelli" in the two compound eyes of a common house-fly is said to be about 4,000, and in some Dragon flies as many as 24,000.... Some have asked me to give them instructions for

Mounting Objects.

There are several methods of mounting; some objects are put up dry; others in Canada Balsam, or Dammar Varnish, or Glycerine Jelly, and others still in some kind of preserving liquid. For some kinds of mounting the cost of materials and apparatus is too great, and the amount of care and skill required are more than quite young people are likely to have, and those sufficiently advanced in microscopic matters to undertake the more difficult kinds of mounting, are likely to have a work on the microscope in which such matters are given more in full than could be possible in these articles. Some of the methods of mounting are so difficult as to be an art of themselves, but the one in use for the greater number of objects is

Mounting in Canada Balsam,

and that, too, is the simplest of all. Still this requires some care, and to describe it properly will require more room than I can give to it this month; besides I need to experiment a little to see if I can make some of the operations more simple. It is well not to be in a hurry about mounting; you who never before used a microscope can have hardly become skillful enough to make neat preparations for mounting. Yet I will try what we can do.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. In sacred bible.
2. Alas! no convert. I.
3. Agents main me.
4. I am in a soft net.
5. I tanned! not I!
6. O flagrant coin.
7. Into iron grate.
8. O fine fat cat.

NIP.

SQUARE WORD.

1. A foreign city.
2. Pretty in a landscape.
3. To happen.
4. Moral perceptions.
5. In every forest.
6. XERYION.

BIBLICAL DOUBLE ACROSTIC.

The initials give a noted city, and the finals a famous man of olden time.—1. Part of a house. 2. A city of Sharon. 3. The wife of a Patriarch. 4. A word signifying "My husband." 5. An inflammable fluid. 6. A musical instrument. 7. The mother of a Prophet. ISOLA.

CROSS WORD.

My first is in Washington but not in Lee,
My next is in grasshopper but not in bee,
My third is in meadow but not in hay,
My fourth is in week but not in day,
My fifth is in sadness but not in glee,
My sixth is in wasp but not in flea,
My seventh is in ton but not in pound,
My eighth is in square but not in round,
My ninth is in yesterday but not in now,
My tenth is in when but not in how,
My eleventh is in walk but not in run,
My twelfth is in cannon but not in gun,
My thirteenth is in Krupp, who makes big guns,
Which weigh a very great number of tons.
My whole engages the attention
Of monarch and of peasant;
I should not like to have it here,
I know 'would not be pleasant.

JOHN W. WHEATLEY.

NUMERICAL ENIGMAS.

1. I am composed of 26 letters:
My 11, 6, 5, 19, is used for a summons.
My 10, 17, 4, 15, is used by the shoemaker.
My 9, 8, 14, 24, 5, is burdened.
My 25, 24, 26, 2, is what we all need.
My 16, 12, 1, 14, 24, 5, is inelegant.
My 7, 3, 13, 22, is to thrust.
My 23, 21, 20, 18, is the same as the last.
My whole is a well known proverb. W. H. S. F.

GEOGRAPHICAL ENIGMA.

I am composed of 28 letters:
My 16, 18, 2, 12, is a territory.
My 4, 10, 17, 7, is a river in Asia.
My 24, 26, 6, 5, 3, 15, is a river in New York.
My 11, 14, 12, 8, 19, 4, 9, 21, 4, 4, is a river in Pennsylvania.
My 22, 1, 25, 5, 23, 13, is a lake in one of the Middle States.
My 20, 12, 10, 5, 4, 27, 23, 3, is the Capital of a Southern State.

My whole is where this enigma was made. F. W. PARKS.

SYNCOPE AND TRANSPOSITION.

(In each of the following sentences are two blanks; one letter is to be taken from the word that fills the first blank, and the rest of the letters are to be transposed, to make a word that shall fill the second blank and make sense of the sentence; e. g.—"The men took their ——— with them to ——— the premises." Fill the first blank with the word "wives," syncope the letter s, and transpose the remainder ["wive"] into the word "view" for the second blank.)

1. The ——— was escorted by a ———. (The remainder not transposed.)
2. I ate a boiled ——— at ———.
3. The ——— was pleased with ——— visit.
4. I proffered the ———, but I had to give a pretty good ——— for it.
5. The ——— was situated at the end of the ———.
6. Sometimes it is not ——— to "No."
7. I ——— that the plant is a species of ———.
8. They managed to ——— the officers after fighting their ———.

Thanks for letters, puzzles, etc., to Lee, G. W. Evans, S. W. W., Juliet P., "Word-Builders" (I am glad that so many have enjoyed the game), J. H. B., B. A. Metz, Frank, Minnie B. B. (answers should always accompany puzzles sent for publication), Freddie L. Hurley, I. E. W., Marion, and others, whose favors I hope to answer at some future time.

ANSWERS must be postponed to next month.—Ed.

Send communications intended for Aunt Sue, to Box 111, P. O., Brooklyn, N. Y., and not to 245 Broadway.

Aunt Sue's Chats.

ANNIE F. C.—Those "Shawl-covers" are very convenient for lady-travelers, and I will "give directions"



Fig. 1.—PART OF SHAWL-COVER.

for one with pleasure. You will need one yard and a half of "green Russia linen-twilled crash," 18 inches wide (it costs about 22c. a yard), three 6c. pieces of alpaca skirt-braid (either black or brown as you prefer), and about three cents' worth of ivoryed to match the braid. Cut the main piece for the bag, 22 inches long, leaving the width of the material entire. Cut two circular pieces 9 inches in diameter, and 4 pieces like figure 3—eight inches by two—for the handles. Sew the braids on to the main piece, of which figure 1 shows an end, leaving nearly an inch space between them, and turn a hem about an inch and a half wide, on both ends. Make the three button-holes (see fig. 5). Work the feather-stitch be-



Fig. 2.—FEATHER-STITCH.

tween the braids, as shown in figure 1 (and more plainly in figure 2. The "feather-stitch" was very thoroughly described and shown in the May No. of the *American Agriculturist*, 1877). You can mark the vandykes with

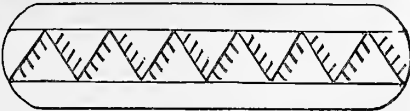


Fig. 3.—PIECE FOR HANDLE.

the corner of a square card. Double the braid and sew it around the edges of the two circular pieces (like welting). Sew on the braid, and work the feather-stitch as in figure 4. Sew the salvages of the main piece around each (as in figure 3), then bind them around with the braid, and sew them on to the bag, as shown in figure 5. They are called "Shawl-Covers," but are used as satchels,

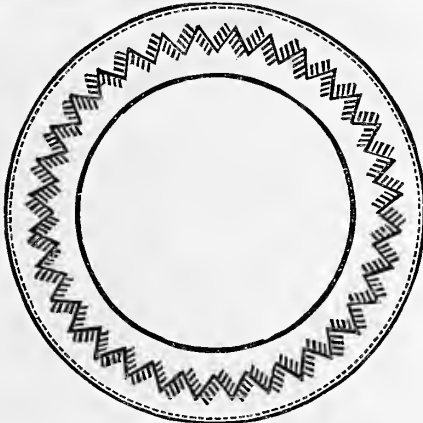


Fig. 4.—END OF SHAWL-COVER.

and you will be astonished to find how comprehensive and convenient they are. Figure 5 shows the cover complete.

F. B. H. asks, "Who were the Seven Sleepers, and how long did they sleep?"—A widely diffused legend of the early days of Christianity has it, that seven noble Christian youths of Ephesus, named Dionysius, Maximilian, John, Malchus, Serapion, Martinian, and Constantine, to



Fig. 5.—SHAWL-COVER FINISHED.

escape the persecutions of the Emperor Diocletian (A.D. 283-304)—some say of the Emperor Decius (A.D. 249-251) (both emperors persecuted the Christians)—took refuge in a cavern, where they were walled up to perish, but were made to fall asleep, and miraculously kept so for 230 years. When they awoke, they ventured down to Ephesus, and were amazed to find Christianity honored everywhere. It is said, that when they died their bodies were

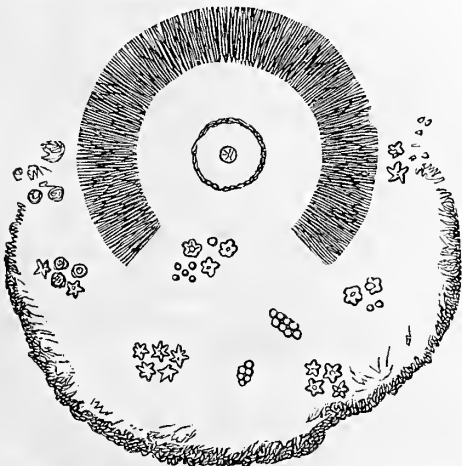


Fig. 3. PLAN OF GARDENER BIRD'S GARDEN. (See p. 228.)

taken to Marseilles, where a huge stone coffin is still shown as containing their remains in the Church of St. Victor, once a Benedictine Convent of the eleventh century. (What happened to the remains between A.D. 500

and 1000, history doesn't tell.) Reference is made to the same legend in the Koran, where it is told in "the Chapter of the Cave." The names of the sleepers there given, are Shazzernooos, Jemlika, Debbernoos, Kephestet-jooos, Meshilina, Mernoos, and Mislina. The Turks think all these names of good omen, and put them on their buildings by way of fire insurance, and on swords to prevent them from breaking. Ketmehr, the dog, which is said to have accompanied them and to have stood guard over them the entire time, is also said to have been admitted to Heaven, together with the ram of Abraham's sacrifice, Balaam's ass—the ass upon which our Lord rode into Jerusalem, and the mare on which Mohammed mounted to Paradise. The story of Rip Van Winkle, by Washington Irving, no doubt grew out of the above legend.

The Doctor's Correspondence.

When in answer to several letters I promised to tell you

About the Telephone,

I knew that I had undertaken a difficult job. I last month told you something about sound, and how it could be sent to a distance. Sound is produced by the air, which, though we can not see, we can weigh, measure, and study it. But in the Telephone we have to do with electricity—something that can not be weighed and measured as air can be. Much is known about the effects of electricity, but just what it is and many other things about it, even the most learned are in the dark. In describing such difficult things as the Telephone to young people, we can only tell what is done, for it would take a volume to tell all that is known about matters concerned in it. You know a little about

One Kind of Electricity;

when you stroke the cat's back on a cold dry day, you hear a crackling, and in the dark see sparks. You have known the same kind of electricity—on the grandest scale, when you see the flashes of lightning and hear the thunder. Nearly all of you have seen the telegraph poles, and the wires stretching from one to another, and know in a general sort of way that messages are sent along that wire somehow by electricity. The electricity used in the telegraph is not the same kind that we get by rubbing the cat's back, or that crackles, when you suddenly pull off your silk neck-tie on a cold clear night, but a very quiet and manageable kind. If you are near a telegraph station, you may have seen several glass jars partly filled with a liquid in which are some bright pieces of metal. These jars together are called a Battery, and here is produced the electricity to work the telegraph. If we have a plate of copper, and another of zinc, and place them in a jar in which is some Sulphuric Acid (Oil of Vitriol), made weak with 12 or more times as much water, the acid will soon begin to dissolve the zinc, but it will not appear to trouble the copper very much. Now let us attach a wire to each, the zinc and the copper (and for this purpose it is best to use wire wound with fine cotton thread), as in figure 1. If we bring the two ends, A, B, of this wire together in the dark, a tiny spark may be seen; if we put between the ends of these wires a bit of very fine platinum wire, the platinum will become so hot that you can not touch it, perhaps hot enough to light a match, or even red-hot. If you join the ends of the copper wire, and bring a compass near it, you will find the needle pays no attention to the North Star, but will place itself at right angles to the wire. All these show that these copper wires are unlike ordinary wire, that something is happening in them, and if you think that this has something to do with the action of the acid on the zinc, you will be very near right. But here is something still more curious. Take

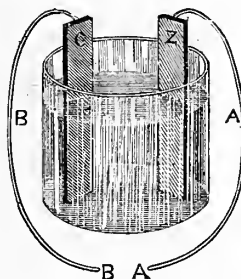


Fig. 1.—BATTERY.

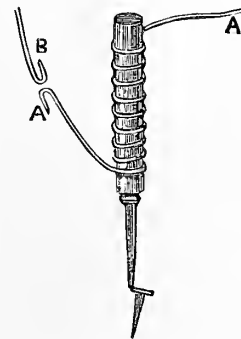


Fig. 2.—ELECTRO-MAGNET.

A Bar of Soft Iron,

and having one of the wires, A, B, long enough, coil it around the iron bar, and then unite the two ends as before. Figure 2 shows this arrangement. Nothing will appear to have happened to the bar, but if you bring a compass needle near to one end of it you will see that it is very much disturbed, and will dance about, as you move it from side to side, in the wildest manner. Now

bring a shingle nail, a small key, or other bit of iron, to the end of this bar; when very near it will jump towards it, and be held there with considerable force. Very likely the nail, or key, already on the bar, will hold up another, and perhaps several. You have no doubt seen a magnet—boys often have their knife-blades magnetized, and they amuse themselves by picking up needles, tacks, etc.—and you will at once say that this iron bar has been made a magnet, or has been magnetized. You may think that now you have a very nice large magnet that will be very amusing to have, so you unhook your wires, A, B, and down goes your nail, or key. You apply the bar to it—it behaves nothing like a magnet, and cares nothing at all about the nail. Hook together your wires again, and you have the bar as good a magnet as before. Bring together, and separate the wires, A, B, as rapidly or as often as you please, and the bar changes from no magnet and to a magnet every time. Now

We must have Names

for these curious acts, and the articles used to produce them. The glass jar with the two metals and acid is called a "Galvanic Battery," and frequently, only a "Battery." To increase the power, 10, 50, or more, may be joined, and it is still a battery. In practice, the metals are so arranged that the action only goes on when the battery is in actual use, and this is a great saving of materials. You have seen that, when the wires, A, B, are

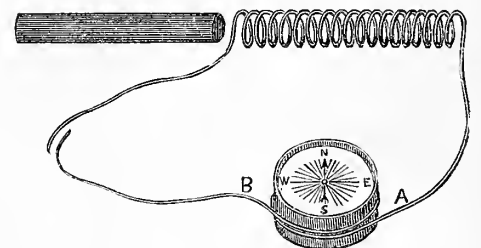


Fig. 3.—MAGNET, COIL, AND COMPASS NEEDLE.

joined, something happens in them—it appears as if something was passing through the wire from the zinc to the copper, and it is very convenient to call it a "current." Whatever it is, it is a form of electricity, and to distinguish it from "frictional electricity," produced by rubbing other things besides the cat's fur, it is called "Galvanic Electricity." As it passes along a wire, that is called a conductor, and the ends of the two wires, whether that may be a foot or 100 miles long, are the poles. Here is one point I wish you especially to recollect: the wire was coiled around the bar of soft iron, and when the current passed through the wire, it did not touch the iron at all, as the thread around it prevented, so no electricity passed into the bar, but only around it—yet this bar behaved in a most unusual manner, it picking up nails, etc., and it was for the time a magnet. There are many cases in which an electrical action in one body, causes a similar action in a body near by. If you will recollect that the wire coiled around the bar induced it to act like a magnet, you will not forget the philosopher's name for it—as they call it *induction*, that is, magnetism—which is still another form of electricity, is induced in the bar of soft iron.

Recollect about Induction,

for it is a most important matter, as upon it depends the working of the Telegraph as well as the Telephone. But you know that some magnets stay active, and not like this iron bar, come and go. If we prepare a very strong "Electro-magnet," as this kind, like the iron bar is called, and then properly rub it against a bar of steel, that steel will become a magnet, and remain so. This may be a small bar like a needle, or a large one, a foot or more long. If we hang the needle by a very fine hair, or stick it through a bit of cork and float it on water, one end will point north, and the other south; the end that points north is the north pole, and the other the south pole of the magnet—names applied to a magnet of any size. If the magnetic bar is straight, its north and south pole are far apart; if bent up like the letter U, it is called a horse-shoe magnet, and its poles, though close together, are still north and south. Now, suppose you have a bar magnet, and a coil of wire, as in figure 3; pass the magnet within the coil, and immediately there will be a disturbance set up in the wire; a compass needle, if surrounded by the wire, will at once dance about and take a position, and when the magnet is removed from the coil, the needle will go back to its former place, and as often as this is repeated, just so often will the compass be disturbed. If the coil were a sufficiently large one, made of a very long wire, and the bar magnet very strong, we would take away the compass needle and bring the two ends of the wire of the coil near together; then, on passing the magnet into the coil, we should get a spark! Now you have this wire acting just as the wire did in No. 1, when a current of electricity was passing through it. You have seen that a current of electricity passing through a coil of

covered wire, can induce magnetism in a bar of soft iron placed within the coil, and in this last case, a permanent—or steel-bar magnet can induce electricity when placed within a similar coil of covered wire.

Most Wonderful, Indeed,

is this matter of induction; and I have given some space to telling you about it, as, until it was discovered, it was not possible to have either Telegraph or Telephone—and it is not possible to understand the Telephone, unless you have a general notion of this. More than this—it shows how closely magnetism and electricity are related, as we see that either can produce the other. In the next paper I hope to get to the Telephone itself, so keep in mind this talk about induction. THE DOCTOR.

About some very Curious Birds.

Those of you who live in the country with your eyes open—many, and not young persons altogether, are practically blind, for though they have eyes, they see but little that goes on about them—can find much to interest them in watching the ways of birds. Indeed, those who live in villages and towns can enjoy something of this, but the birds that will stay about houses are fewer than in places where there are woods and shrubs. It is very curious to examine some birds' nests when built, and still more interesting to watch the birds when building. If you would observe them at work, you must be very patient, and keep very still. When the birds find that you do not intend to harm them, they will go on with their work. But if you pounce in among them, as if to say, "Here I am! I want to see you work, now go ahead!" you will see nothing at all. Take a seat, keep quiet, and wait. Such a bringing of bits, such a talking it over, and such a time generally as many birds make over nest building, is well worth watching. Then, when nests are finished, what a wide difference! Some, a mere hollow in the sand, or among the grass, hardly cost any labor; then others are rough sticks, with a little grass or other soft material upon which the eggs are to rest. How different are these from the carefully woven nest of the common Robin, with its foundation of coarse straw and weeds, all finely plastered, and then lined with moss and soft material. The Robin's nest is a coarse affair when compared with that of the little Humming Bird, built of soft down from the ferns, and so carefully covered by lichens, all neatly glued on, that it looks so like a lichen (or "moss") covered knot, as to be but rarely discovered. These nests are all interesting, but among our birds the Oriole, or Golden Robin, shows the greatest ingenuity. It makes a long bag, which is woven of the strong bark of weeds, of strings, ravelings, or any other such material as it can find, and doesn't object to

examining the various styles of nests, and will wonder, as many others have done, why some birds get along with very little trouble in preparing their nests, and others take the greatest pains in making them.

But as curious and pains-taking as the nests of some of our birds are, what shall we say to a bird which builds

these bowers are merely pleasure halls. The birds and their Bower are shown in figure 1. But as strange as this is, what will you say to a bird that not only builds a bower or hut, but makes a garden in front of it! The European gardening journals that have come of late, have accounts of a remarkable style of gardening—done

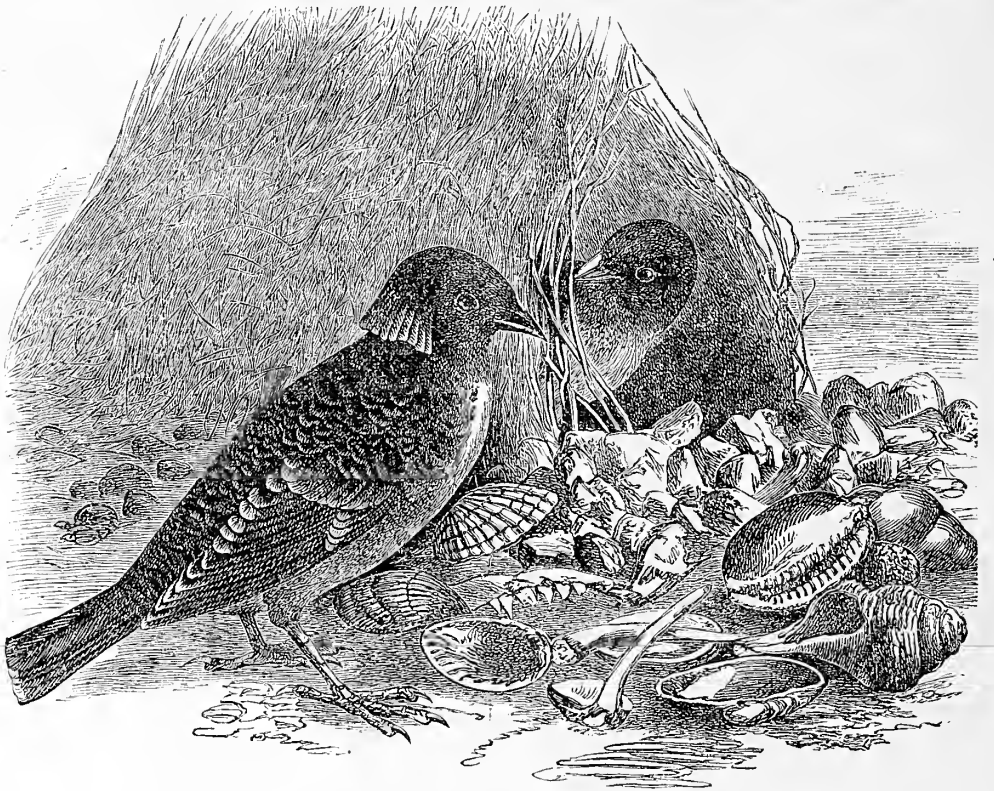


Fig. 1.—THE BOWER BIRDS OF AUSTRALIA.

a house just for the fun of it—not to be used as a nest, but just to frolic in! It seems so strange a story that we should find it difficult to believe it, had not several naturalists given an account of these Bower Birds of Australia, and their structures been taken to Europe. Strong grasses are stuck up in such a manner that they meet at the top, stones being put around to hold them in place. As these houses are not for use, but for sport, the birds

by birds. An Italian naturalist, who has been exploring and collecting new and rare plants in New Guinea—which you know is an island just north of Australia, and not far below the Equator—brought home specimens of a new plant, an Orchid, and gives an account of the curious use made of its stems by the natives—that is, the feathered natives. You all may not know that among the family of plants called Orchids, are some of the most showy and curious of all plants; they are much valued by cultivators, and some of those in tropical countries grow upon the branches of trees, and never in the ground. The Gardener Bird is related to the Bird of Paradise, but is not, like that, a brilliant bird, it having brown plumage, and is about the size of a dove. The bird chooses a level place, where there is the stem of a shrub about the size of a common walking-stick. Around this it builds up a cone of moss, to make a central pillar about two feet high. Then twigs are placed all around, one end resting on this pillar, and the other on the ground, all at regular distances, to make a hut, as seen in figure 2, about three feet across. These twigs are all of a new Orchid discovered by Signor Bescari, the naturalist, which remain alive for a long time. Having built its house, and of course left an opening for a door, this bird does what the natives of the island have not learned to do, it immediately goes to work to fix up its front yard, or make what the writer calls a garden. It brings nice, clean moss, and places it carefully in front, and partly around the house, taking care to remove every stick and stone. When the lawn is ready, like a good gardener, the bird lays out its flower-beds; but it has not quite learned all about gardening, and does not cultivate, but it picks all the bright flowers, and brilliant berries, and other fruits, and places them in groups upon its turf of moss. When these fade, they are taken away and replaced by fresh ones. The traveler evidently took more notice of plants than of birds, as there are several things he omits to tell that we should like to know; he does not tell us about the nest, though he speaks of this as "the home" of the bird, and that the flowers and fruits are gifts brought by the male bird to please its mate. He says that the natives call the bird *Buruk Gurea*, which means "master-bird," and that they never destroy the nests, even if in the way. The bird imitates the songs and screams of other birds, and in that way often mislead hunters. It is, at any rate, a most curious bird, and we hope that some one who visits its country will tell us more about it. The plan of the house and garden are shown in figure 3, given on page 227. The small circle is the central pillar of moss; the outer circle is the stems that form the hut; the outer line shows the extent of the garden of moss, and the spots between this and the house, show the groups of flowers and fruits.

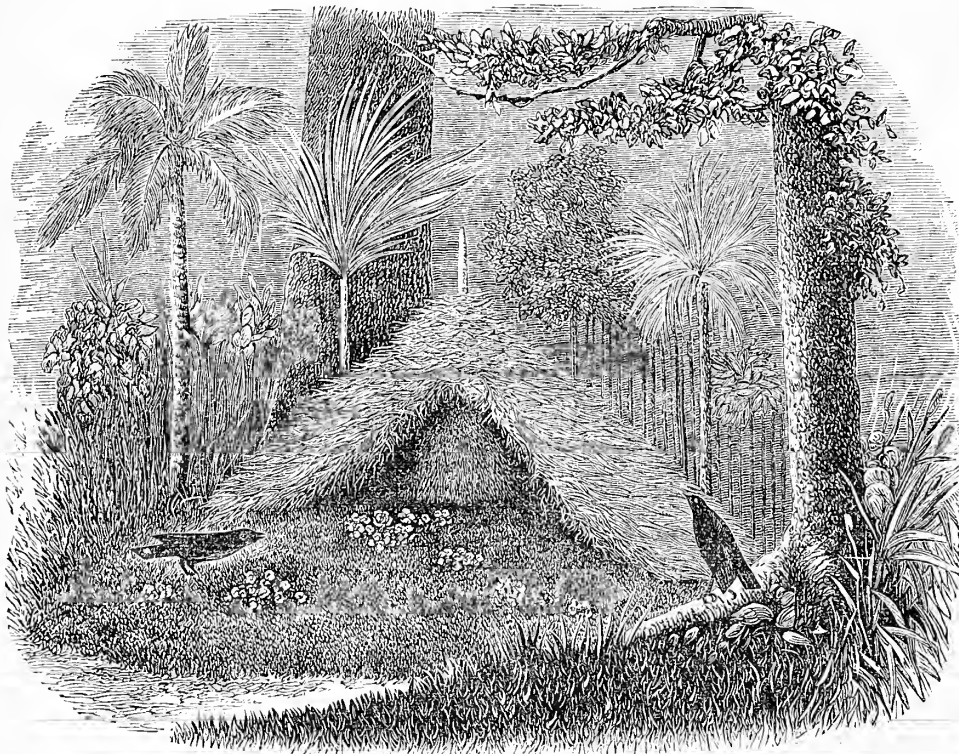


Fig. 2.—THE GARDENER BIRDS OF NEW GUINEA.

a bit of lace edging, or other finery that it may come across; this nest it hangs to a slender twig, where it is far out of the reach of boys, who know it as the "Hang-bird's nest." All these affairs built by our birds, are for use; they are places in which the eggs are to be laid, and young ones reared. You will be much interested in

decorate them with gay feathers and leaves, and what is still more strange, they bring bones and shells from a long distance, merely to beautify the place. Here the birds meet and, according to the accounts, have a great time in romping and mating, though sometimes the males have serious fights. Their nests are built in the trees;

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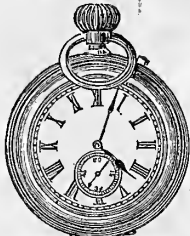
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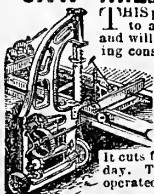
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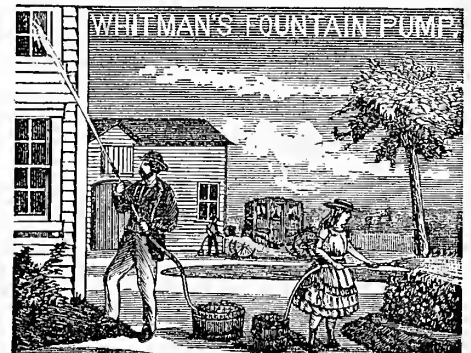
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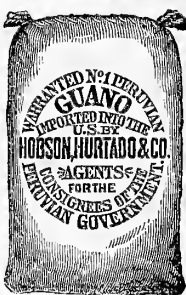
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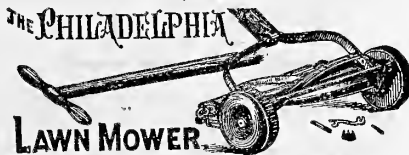
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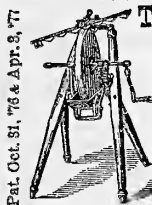
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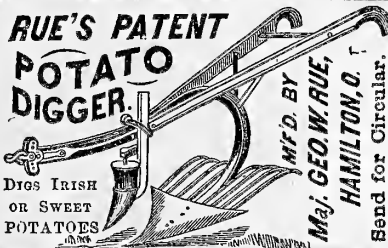
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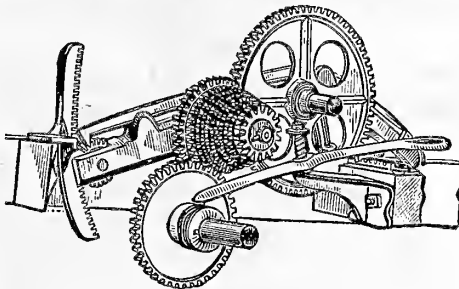
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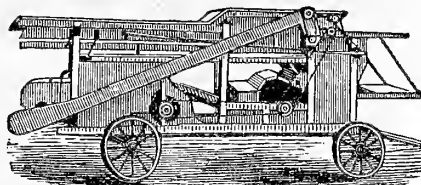
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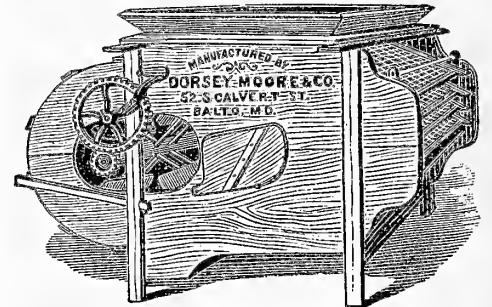


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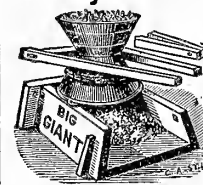
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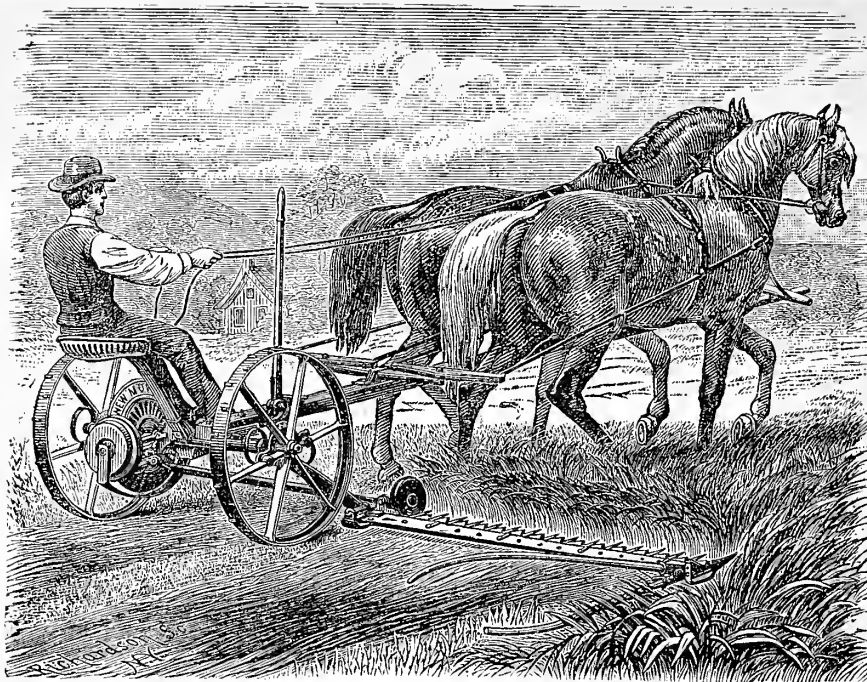
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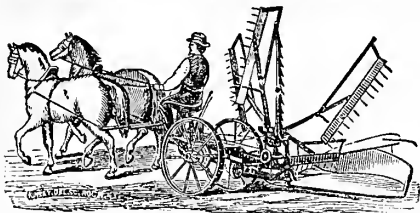
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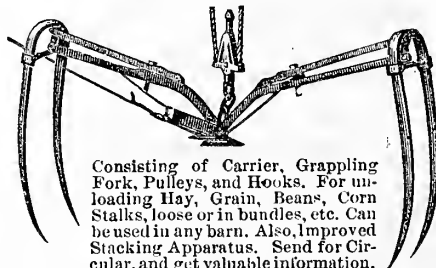
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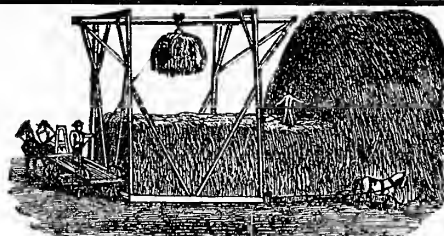
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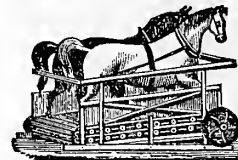


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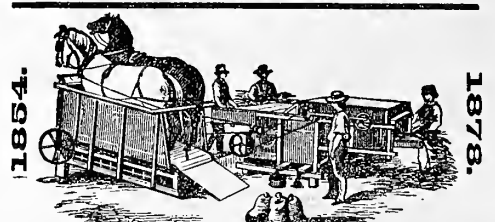
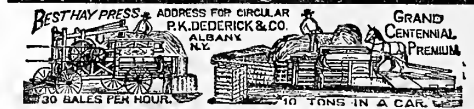
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It often happens that persons, who have not time to secure these valuable and useful premium articles by raising clubs of subscribers, are desirous of purchasing one or more of them, and wish us to procure or select them. For the accommodation of such, we will supply and send most of these premiums for cash, at the prices in the Descriptive List, and prepaid or otherwise, as stated.

Table of Premiums

For Subscribers to American Agriculturist.

(In the following table is given the price of each article, and the number of subscribers required to get it free, at the regular rates of \$1.60 a year, and also (with a part of the premiums), at the club rates of \$1.10 a year, postage included, which is prepaid in all cases by the Publishers.)

TABLE of Premiums and Terms				Price of Premiums	Number of Subscribers required at or above
For Volume 37—(1878).					
Open to All—No Competition.					
No.	Names of Premium Articles.				
1	Tea Set (Middletown Plate Co.)			\$50 00	66
2	Ice Pitcher (do. do. do.)			\$13 00	20
3	Cake Basket (do. do. do.)			\$7 50	16
4	Cake Basket (do. do. do.)			\$10 00	18
5	Casters (do. do. do.)			\$5 25	13
6	Casters (do. do. do.)			\$7 50	16
7	Casters (do. do. do.)			\$10 50	19
8	Butter Cooler (do. do. do.)			\$6 50	15
9	Pickle Jar and Fork (do.)			\$5 00	12
10	Syrup Cup with plate (do.)			\$6 25	15
11	Child's Cup (do.)			\$3 50	8
12	Twelve Teaspoons (Meriden Cutlery Co.)			\$7 25	16
13	One Dozen Tablespoons (do. do.)			\$14 50	22
14	One Dozen Table Forks (do. do.)			\$14 50	22
15	Ladies' Folding Pocket Scissors (do.)			\$1 50	4
16	Child's Knife, Fork & Spoon (do.)			\$3 00	9
17	French Cook's Knife, Fork, & Steel (do.)			\$3 75	9
18	Case of Scissors (U.S. Steel Shear Co.)			\$4 00	10
19	Portable Writing Desk, (C. W. F. Dore)			\$1 75	4
20	Walnut Work Box (do.)			\$1 25	4
21	Buck-Saw for Boys (do.)			\$1 50	2
22	Little Girl's Wash Set, (do.)			\$1 00	3
23	Sled, (do.)			\$2 00	5
24	Spring Horse, (do.)			\$11 00	18
25	Boy's Wagon (C. W. F. Dore)			\$5 00	12
26	Boy's Tool Chest, (E. I. Horsman)			\$1 00	3
27	Boy's Larger Tool Chest (do.)			\$2 50	7
28	Boy's Larger Tool Chest (do.)			\$5 00	12
29	Pat. Magic Belthead Pencil (Ludden & Taylor)			\$1 50	4
30	Ladies' Magic Charm Pencil (do. do.)			\$2 00	5
31	Gents' Magic Charm Pencil (do. do.)			\$2 75	7
32	Gold Pen, Telescopic Case (do. do.)			\$3 50	7
33	Gold Pen and Pencil, Elegant (do. do.)			\$5 50	13
34	Knives and Forks (Patterson Bros.)			\$14 75	22
35	Knives and Forks (do. do.)			\$18 50	28
36	Carver and Fork (do. do.)			\$3 75	9
37	Pocket Knife (Meriden Cutlery Co.)			\$1 50	4
38	Pocket Knife (do. do.)			\$2 00	5
39	Pocket Knife (do. do.)			\$2 75	7
40	Ladies' Pocket Knife (do. do.)			\$2 00	5
41	Mullum in Parro Knife (do. do.)			\$3 50	8
42	Crandall's "John Gilpin" (do.)			\$1 00	3
43	Crandall's "District School" (do.)			\$1 00	3
44	Crandall's Masquerade Blocks (do.)			\$1 00	3
45	Crandall's "Acrobats" (do.)			\$1 00	3
46	Crandall's Building Blocks (do.)			\$1 50	4
47	Crandall's "Menagerie" (do.)			\$2 00	5
48	Pair of Skates (Patterson Bros.)			\$3 50	8
49	Boudoir Clock (S. B. Jerome & Co.)			\$3 50	8
50	Wire Bed Mattress (H. Buckingham)			\$12 00	19
51	Houchin's Patent Pocket Cook Store			\$1 35	4
52	Household Press, (W. A. Boardman)			\$2 00	5
53	Aquapull, (Force Pump), (W. & B. Douglas, Middletown, Conn.)			\$9 00	17
54	Self-adjusting Gold-plate Watch Key, (J. S. Birch)			\$1 00	3
55	Pocket Tool Holder (Miller's Falls Co.)			\$1 00	3
56	Planer, Splendid 7-foot, (Steinway & Son's)			\$650 00	625
57	W. S. Blunt's "Universal Force Pump"			\$12 00	19
58	Silver Watch (American Watch Co.)			\$30 00	44
59	Bracket Saw (Miller's Falls Manf' Co.)			\$1 25	4
60	Payson's Indelible Ink—Pen, etc.			75	3
61	Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)			\$2 75	7
62	Abbott Pocket Microscope (L. G. Abbott)			\$1 50	4
63	Cahoon's Broadcast Seed-sower (do.)			\$5 00	12
64	Moore's Floral Set (Moore, May & Co.)			\$1 00	3
65	Garden Seeds & Flower Bulbs (select'n)			\$2 00	5
66	Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)			\$12 00	19
67	Breech-loading Pocket Rifle (Stevens)			\$16 00	24
68	Double Barreled Breech-loading Gun (do.)			\$50 00	66
69	Shot Gun (E. Remington & Sons)			\$6 00	14
70	Shot Gun, breech-loader, (do. do.)			\$35 00	36
71	Creedmore Long Range Rifle No. 1 (do.)			\$10 00	19
72	Creedmore Long Range Rifle No. 2 (do.)			\$15 00	24
73	Creedmore Long Range Rifle No. 3 (do.)			\$20 00	32
74	Hunting & Target Rifle (Remington)			\$22 00	34
75	Vest Pocket Pistol (Remington)			\$3 75	9
76	Revolver (Remington)			\$9 00	17
77	Turn-table Apple Parer (Goodell Co.)			\$1 00	3
78	Climax Apple Corer & Slicer (do.)			\$1 00	3
79	Family Cherry Stoner (do.)			\$1 00	3
80	Bay State Apple Parer & Slicer (do.)			\$1 50	4
81	"Saratoga" Potato Peeler & Slicer (do.)			\$1 00	3
82	Sewing Machine (Remington)			\$50 00	66
83	Family Scales (Fairbanks & Co.)			\$14 00	21
84	Clothes Wringer (Best—Universal)			\$8 00	16
85	Worcester's Great Illustrated Dictionary			\$10 00	18
86	Any Back Volume Agriculturist			\$1 75	20
87	Any Two Back Volumes do.			\$3 50	35
88	Any Three do. do.			\$5 25	45
89	Any Four do. do.			\$7 00	55
90	Any Five do. do.			\$8 75	65
91	(Each ad'l Vol. at same rate)				
92	Twenty-one Vols. XVI to XXXVI			\$36 75	53
93	Any Back Vol. Agriculturist			\$2 50	25
94	Any Two Back Volumes do.			\$4 00	40
95	Any Three do. do.			\$6 00	60
96	Any Four do. do.			\$8 00	80
97	Any Five do. do.			\$10 00	100
98	(Each ad'l volume at same rate)				
99	A \$10 Library (your choice)			\$10 00	18
100	A \$15 Library do.			\$15 00	24
101	A \$20 Library do.			\$20 00	31
102	A \$25 Library do.			\$25 00	38
103	A Choice of Good Books. (See Description, p. 408.)				

Every Premium article is new and of the very best manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums, Nos. 15, 18, 29 to 33, 37 to 41, 49, 51, 54, 55, 59 to 62, 65, 75, 76, 86 to 102, inclusive, will each be delivered FREE of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. Illustrated and Descriptive List sent free to applicants.



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 209.

Gapes in Chickens.—"A Subscriber," Newport, R. I. Gapes is caused by the presence of small worms in the wind-pipe. Young herbivorous animals of all kinds are very subject to these parasites, the eggs of which are supposed to be dropped in the excrements of the older animals, and swallowed by the young ones. Prevention is the best remedy. This consists, in regard to poultry, in removing all the droppings from the houses, keeping the soil of the yards fresh by digging over the surface, or providing new locations for them every season. Some camphor dissolved in the drinking water is said to be a remedy, but as we have always avoided the disease by precaution in our yards, we have no experience as to alleged cures.

To Estimate the Amount of Cord Wood in an Acre.—"E. L.," St. Louis. To estimate the quantity of cord wood on an acre of wood land, requires experience. A person who has been engaged in clearing land and cutting wood, could give a very close estimate at a glance, but other persons would make the wildest guesses. An inexperienced person may proceed as follows: measure out 4 square rods of ground; that is, 33 feet each way, and count the trees, averaging the cubic contents as near as possible of the trunks, and adding one-fourth of this for the limbs. Then, as 128 cubic feet make a cord, and the plot is one fourth of an acre, the result is easily reached. Fairly good timber land should yield a cord to every 4 square rods. A tree two feet in diameter and 30 feet high to the limbs, will make a cord of wood, if it is growing in close timbers, and the limbs are not heavy. If the limbs are large and spreading, such a tree will make 1½ to 1¾ cords. A tree one foot in diameter will make only a fourth as much as one twice the diameter. In estimating, it is necessary to remember this fact.

Oil-Meal-Corn-Mill.—"W. L. C.," Sullivan Co., Pa. Linseed, cotton-seed, and oil-cake, are very valuable feeding stuffs. They are worth more than corn, and should be fed in small quantities. We are using the Big Giant corn-mill, and find it a good one. The Orange Judd Company keep no seeds for sale.

The Dodge Hay Press.—By an oversight, the address of the manufacturers of the Dodge Hay Press was omitted in the article describing this press in the *American Agriculturist* for Oct., 1877. The manufacturers are the Mohawk and Hudson Manufacturing Co., Waterford, N. Y.

Directions for Castrating and Spaying.—"J. D. B.," Jackson, Mich. These operations are described in Dr. Dadd's *American Cattle Doctor*.

The Value of Corn-Fodder.—"R. S. H.," Lennoxville, Canada, writes: "I have tried most all kinds of corn as a dry food for stock in winter, from the Dwarf Sweet to Evergreen Mammoth, and find no other gives so good returns as the early Sugar corn. It is very sweet, will grow in good ground six feet high, and if sowed thick in drills, will give from five to six tons of excellent fodder per acre. It should be sowed about the first of June in drills, two and a half feet apart in rich ground, and if the season is any way favorable, can be cut from the first to the middle of August. It should be bound in small bundles and set up in shocks, to dry, and it will become so well cured before wet weather sets in, that it can be packed away as well as hay, or straw, without being damaged by moulding. The seed should be sowed thick, not less than two bushels of good seed per acre. Horses, cattle, and sheep, are very fond of it, and with a small quantity of hay thrive well, and milch-cows do much better than when fed upon hay alone. It requires the manure in the drill, so that the corn will have a quick growth and it will be very tender.

Soot on the Garden.—"H. M. B.," Waterbury, Conn. Yes, soot from chimneys is of value in the garden, and is, so far as known, excellent for all crops, but too scarce and valuable to be wasted upon the coarser kinds. Soot is the condensed matters which escape in the combustion of wood and bituminous coal. The constituents of the wood and coal form various new compounds which, coming in contact with the cool chimney, condense and harden there. Our common hard

coal (anthracite), forms no soot proper. Soot consists largely of charcoal, various salts, especially those of ammonia, and peculiar substances related to creosote. We can not put our hand on a good analysis showing the difference between soot from wood and from soft coal, and a recent work says such are much needed. There is a general impression that the soot of bituminous coal is the richer in ammonia salts. In Europe, where it may often be procured in large quantities, it is highly valued for all crops to which ammonia is beneficial, at the rate of 15 to 30 bushels per acre, on wheat and grass crops. In the garden its value as a fertilizer is scarcely greater than that of an insect destroyer; its creosotic matters being very fatal to most insects. For the garden it is very economically used as a liquid, 6 or 8 quarts to a hoghead of water. This remarkably stimulates plants that need it, and clears most of them from insects. Any gardener who has a good supply is fortunate.

Yellow Strawberry.—"J. S. G.," Dayton, O. There are several so-called "white" strawberries that are more yellowish or cream-colored than white. "Lennig's White" is cream-colored, with a fine blush, one of the handsomest as well as best of berries—when you get it. Then there are three or four of the Alpine class with white fruit, including the Monthly and Bush Alpines. A poor variety, called the "White Carolina," was formerly cultivated, and two, at least, of the Chilean strawberries would be classed as white; they have enormous fruit, but would not stand our climate. If you saw them "a great while ago," probably it was one of the Alpines, which are still cultivated by those who like them.

Alfalfa in New Brunswick.—"F. W. H.," St. Johns, N. B. Alfalfa is a plant that thrives best in dry climates. It was brought from Chili, a dry South American country, to California, where the climate is very dry. There it has thriven to a remarkable degree. But wherever there is moisture enough to produce good clover, alfalfa has not succeeded. It could not be grown in New Brunswick so profitably as clover, and it is a question if it would grow at all.

To Kill Wild Rose Bushes.—"G. F. C.," St. Joseph, Mich. To destroy wild rose bushes it is necessary to kill the roots, or they will throw up suckers and perpetuate the growth. This is a difficult plant to get rid of in most meadows. The best method known to us is to mow the bushes when the roses are in bloom, or in July, and if sprouts appear later, to cut them down before they ripen their wood. Later growth will be tender, and not survive winter. Next year they will be weak and sickly, and this treatment continued will destroy them.

Very Strange.—"W. W. Rubottom, of Spadra, has a rose tree with green roses upon it. * * * This curiosity is said to be the result of budding the white rose upon the Weeping Willow."... A green rose is not so strange, as we had one some 20 years ago, and have had them several times since. The manner in which "it is said to be" produced is strange, and would be stranger still were it true; but the strangest of all is that such false teaching should be found in the "Southern California Agriculturist," a journal generally so sensible in its teachings and so full of excellent promise.

Drawing Water with a Siphon.—"G. H.," Stark Co., Ohio. Water can not be drawn with a siphon over a height of more than 25 to 28 feet. If the pipe is very smooth inside, and the flow of water is larger than one inch, a rise of 28 feet may be overcome; otherwise the friction and the adhesion of the water to the surface of the pipe, will prevent the flow from rising more than 24 or 25 feet.

Feeding Cattle for Profit.—A statement, made by an Irish farmer, relative to the feeding of calves from birth to ripeness for the butcher, with the method of feeding, and the cost, and the profit, is not without interest to us, when we consider the importance of the profitable feeding of animals, and the value of the manure to our rapidly changing system of agriculture. The calves cost \$10 when two weeks old; that is, the dairy was credited, and the stock account was charged with that sum, when the feeding of the calf was begun. Each calf received 4 quarts of skim milk per day, for 108 days, and for this period a daily average of 10 ounces of a mixture of linseed and cotton seed cake boiled with the milk, with four pounds of roots and green feed, and one pound of hay. After four months old, the daily ration was a pound and 4 ounces of a compound made of one part bran, one malt dust, two rape-cake, two linseed-cake, and four cotton seed cake, thoroughly broken and mixed together. Each month the ration was increased about five ounces per day. 7½ lbs. of roots or green clover, and 2 pounds of chaffed straw were also given. The food cost about 4½ cents a pound, and the expense of feeding could thus be closely calculated. The following

table gives the result of feeding nine head of well bred animals, steers and heifers, from 18 to 25 months old.

Age, Months.	Dressed Weight.	Value.	Value of Manure.	Cost.	Profit.	Profit, per cent.
18	606	\$113.60	\$22.25	\$110.00	\$25.85	30
—	557	104.43	20.41	103.52	21.32	27
—	492	92.75	18.04	90.25	20.54	29
19	631	118.30	24.25	114.70	27.85	29
21	732	137.25	29.17	135.75	30.67	24
22	660	123.75	27.50	130.50	20.75	18
23	724	135.75	32.30	148.43	19.62	15
24	748	140.43	36.62	163.51	16.54	9½
25	748	140.25	38.25	169.75	8.75	6

The figures show a fact which is neither new nor surprising, viz., that the longer an animal is fed after it is mature, the profit decreases; or to use a well understood expression, after it has reached a salable age it begins "to eat its head off." This exemplifies also the fact that without keeping an accurate account of cost, etc., we can not hope to know the precise point where profit ends and loss begins. Generally the point is about the age of 20 months; that is, with early maturing breeds.

Tumors on the Legs.—"C. S.," Leominster, Mass. In scrofulous animals hunches, nodules, or tumors, frequently form upon the limbs. When these are upon a joint, it is sometimes dangerous to meddle with them, because in such conditioned animals wounds do not often heal readily, and an open joint may ensue, to the final destruction of the animal. So long as there is no lameness, it would be well to do nothing more than to apply a mixture of 7 parts of Glycerine and 1 part of Iodide of Potassium, which may help to the absorption of the tumor.

How to Burn Marl into Lime.—"J. S. P.," Bonneau's Depot, S. C. Marl can be burned into lime more or less impure according to the nature of the deposit, by putting it into heaps with brush-wood in alternate layers upon a foundation of logs, and setting the logs on fire. When the heap is thoroughly ignited, it should be covered with fine green brush and earth to confine the heat. In three days the operation will be complete. Shell marl, which is an impure carbonate of lime, and not the "green sand marl," if thus treated, will be made into a valuable fertilizer.

Soft or Hard Water for Cattle.—"C. H.," Ontario, Canada. Limestone water is probably not injurious for cattle and horses. In limestone districts we have the best grass, the best grain, and the best stock. The choicest localities, such as the blue grass region in Kentucky, Western New York, the Shenandoah Valley in Virginia, and the Missouri Valley in Ohio, are all in a limestone country with hard water.

How Many Calves can a Cow Raise.—"Q. A. B.," Meigs Co., Ohio. A good cow may be expected to milk during eight months of the year sufficiently to support a calf. If she is kept for raising calves, and the calves are weaned when 2 months old, she can supply four calves. When a calf is 2 months old it may be supported upon other food than milk, so that by managing well, one good cow can be made to raise 4 calves, if not more. A good milker, when fresh, will yield more than enough to feed one calf, and at least two calves can be fed from her milk for two or three months. If calves are designed for beef cattle, it is advisable to procure a good Shorthorn or a Hereford bull to sire them.

Corn Harvester.—"M. C. C.," Whiteside Co., Ill. A harvester that would cut corn and drop it in bundles, would certainly be a valuable machine, and if sold at a reasonable price, would be generally used. It is one of the improvements that farmers are anxiously waiting for. There are several machines made for this purpose, but none as yet that are satisfactory.

"A Hollow Tail."—"J. B.," Butler Co., Pa. In every cow's tail there is a portion where the bone is wanting, and the part is soft. This is natural, and not a state of disease. "Hollow Tail," and "Wolf in the Tail," are terms that have no significance, beyond the mere fact that something is wrong with the cow. It is not in the tail at any rate.

The German Farmer's System.—The mission of the true American seems to be to chase the setting sun. Ever on the march towards the west; or ever looking with longing eyes towards that wished for but unattainable locality which may be called his final resting place—because there is no beyond to it for him, and he can not go back—he is engaged chiefly in getting what he can from his land now, without thinking of the future. His successor, when he finally makes a sale, and westward flies, is a German farmer, in the majority of

cases. But the German comes to stay; and having no thought of "the West," he sets about cultivating his farm in a methodical manner. He works without stint, and he saves without grudging; being industrious and economical, he succeeds and makes money rapidly. His children are as industrious and as careful as he, and his frau takes a hand with the hoe and does not regard the latest fashion in her dress. By and by the boys and girls marry, and the son is presented with a farm, the daughter with a dowry to start with, and the youngest boy sticks to the farm. Where such people live, thrift abounds.

Value of Gas Lime.—"Ottawa," Canada. Gas lime, when fresh, contains poisonous matter injurious to vegetation. But when it has been exposed to the air for some months, these bad qualities are lost, and the lime becomes mainly a mild carbonate. It may then be used upon clay or peaty soils, or meadows, at the rate of 50 to 100 bushels per acre, with benefit.

Treatment of Hoove.—"J. F. W.," Lancaster Co., Pa. When a cow is "blown," or suffering from "hoove," relief is often gained by giving one ounce of carbonate of ammonia dissolved in water, and a purgative soon after. If the cow has eaten too much dry feed, it is not well to give much water until the purgative has worked off. If she is "blown" by green feed, such as clover, the quickest remedy is to use the trochar and open the paunch, leaving the tube in the opening until the gas is no longer emitted.

Teasels as Handles.—Not the prickly remains of the flower heads, used to "tease and tear" a nap upon woollen cloths—lively handles these would make—but the stems upon which these heads grow. These have been imported into England from the Continent in considerable quantities, and are likely to appear as one of the novelties of the season, as handles to ladies' sunshades and parasols. These teasel-stems are variously twisted, bent, and furrowed, and made more grotesque by the "fasciation" or soldering together of the branches, as we often see in asparagus and cockscombs.

Prices of Ordinary Shorthorns.—We learn that sales of young pure bred Shorthorn bulls and calves have been effected to a large extent in Kentucky at about \$100 each; at this rate business is very brisk. 13 young animals were purchased by one buyer from Texas at an average of \$75 each. At such prices a large demand from farmers and breeders may be looked for, and if some breeders would confine their efforts to the production of milking strains, a very great demand would arise from dairymen.

Periodic Ophthalmia in a Horse.—"B. F. A.," Macon Co., Mo. In periodic ophthalmia the eyes become inflamed and covered with a film; this disappears for a time, and again appears, perhaps several times in succession. The final result, however, is almost certain blindness. The only treatment is palliative; give a dose of cooling medicine, as one pound of salts; keep the horse in a clean stable; bathe the eyes in a solution of 4 grains of sulphate of zinc, in one ounce of water, and inject a little into the eyes.

Oil Paintings Distributed.—A large number of persons have sent as circulars, tickets, etc., of "A Grand Testimonial Gift Distribution of Oil Paintings." It seems that there has been a "drawing" of some kind, and those who have "drawn" pictures can have them by paying \$2.10, to cover "expenses," and the express charges. We have received numerous requests to show this up as a "humbug." So far as the distribution is a game of chance, so far we hold it to be wrong. Of course the projectors of the scheme have an object in view. They are not afflicted with such a fit of generosity as will induce them to send paintings all over the country at one-tenth or one-twentieth of their value, unless they expect to gain something by it in the end. Now, while we utterly discountenance every game of chance, no matter by what name it may be called, we have no right—and in the question of humbogs we have to consider that both parties—the accusers and the accused, have rights—to set this matter down as a "humbug" unless we know it to be such. It all rests upon the question: is the painting sent—and recollect that no one is obliged to send for it—worth the cost of the \$2.10 for expenses and the express charges. Now notions greatly differ. Let us suppose that all told, the cost of the painting is \$5 to the one who receives it. If asked if an oil painting was worth \$5, we really could not say. We could readily say that if an oil painting was, as such things sold at auction in New York, or other large city, and this is an excellent test of real value—only worth five dollars, or five times five dollars, we should not like to be obliged to possess it. But ideas, or notions, differ—we will not call them *fastes*, for they have not reached to that. There may be people—no doubt there are—to whom an "oil

painting," which could be produced for \$5, at a profit, would be quite satisfactory. We can not write the thing down as a humbug, unless we know that the pictures are worth less than they cost to those who receive them. The only evidence we have as to the kind of paintings sent out, is from a lady in New Jersey, who writes:—"The painting has come, and it is one of the vilest, cheapest daubs imaginable, not worth the canvas it is on, and instead of adorning, as they say, 'the walls of the most sumptuous homes,' I would not put it in my kitchen, and would not give 25 cents for it." But as the thing is a game of chance—a "Gift Distribution,"—the next painting may be worth 37½c. or 50c., and so up along. We can only say to those who do not like these offers, it is the easiest thing in the world to let them severely alone.

How to Rot Straw.—"J. T. G.," Sulphur Hill, Ind. Straw alone is not easily decomposed. This is seen in the case of straw used for thatched roofs, some of which are a hundred years old or more, and are yet sound. Still they have been exposed to heat and cold and wet for all these years. Straw can only be rotted quickly by mixing some actively fermentable matter with it. But straw may be used on Western farms to good purpose, by spreading it upon the ground and plowing it in. Thus all the benefit that could be derived in any way from the straw, will be gained by the soil, because in whatever manner we use the straw we do not really add anything to it. Much good may also be derived by spreading straw over winter grain, as a mulch and a protection against sudden changes of the weather in winter.

Why do Hogs Eat Coal?—"H.," Reno Co., Kansas. Swine are intended by nature to get a portion of their subsistence from roots, and to dig these roots from the soil by means of their snouts, which are well adapted to this. In eating roots so procured, a large quantity of soil, or mineral matter, is swallowed, and it seems to be intended by nature that this should be done, as, when prevented from pursuing their natural bent, they evince a strong appetite for such things as coal, earthy substances, or even decayed wood. It is always healthful for hogs that are closely penned, to be supplied with sods, soft coal, or charcoal, moderately, but when they have been deprived of these for some time, caution should be observed lest they consume them to excess.

A Question of Manuring.—"R. C. M.," Olney, Ill. It is not always that the trouble and cost of composting manure will be repaid by the benefit gained. Sometimes it is cheaper in the end to spread manure as it is hauled through the winter on to the ground. Where land is flat the danger of washing is very little or nothing, except under unusual circumstances. As to this, judgment should be exercised. Unless it is very clear that a gain is to be made by laborious composting, that course is not advisable; it is better to cart the manure directly on to the land, and spread it at once; not leaving it in piles more than a day or two at the utmost. When manure can be had plentifully for the hauling, it will not pay to compost it. That is only a device to increase the bulk of the manure when it is scarce and costly.

How to Keep a Hydraulic Ram at Work.—"J. A. G.," Lewisburg, Pa., writes that if a small air-hole is made in the feed pipe of a water ram, about two inches in front of the ram, there will be no stoppage on account of want of air in the air-chamber. He has had a ram at work for 30 years without ever a stop from this cause, except when back-water covered the hole. If the hole is too large, it may be made smaller by tapping around it with a riveting hammer.

Cheese Factory in New Jersey.—"F. P.," Woodstown, N. J. We do not remember of any cheese factory in the State of New Jersey, excepting those in which "foreign" cheese is made, or rather imitations of a French and other European cheeses. Doubtless there are openings for such factories in many parts of the State. The capital required for a small factory is not heavy. The building need not be expensive; the machinery can be furnished complete by Whitman & Burrell, of Little Falls, N. Y., who would give estimates on application. See articles in February number.

To Repair an Old Chain-Pump.—"S. W.," Mineola, L. I., gives the following plan for mending an old chain-pump that will not raise the water. First take a stout cord; make the chain fast, so that it cannot drop down the cistern or well, then unhook one of the bucket-links, take the heel of an old India-rubber boot, or some rubber packing; cut a hole through the rubber, press one eye of the bucket-link through sufficiently far to admit of linking again, and then with a sharp knife pare the rubber down sufficiently small, so that it will exactly fit the trough; the round, penny-shape bucket will be a sufficient guide in cutting the rubber-bucket perfectly round. Then re-link the bucket upon

the chain, and repeat this on every fourth bucket the entire length of the chain; it is unnecessary to put the rubber-buckets closer than every fourth one. Be careful that when putting the rubber-buckets back on the chain, that the old metal bucket shall be under the rubber one when entering the trough, so that it will be supported and held firm by pressure against the trough. Do this carefully, and your old pump is good for several years longer, and it will throw water faster than when new.

Economy in Cutting Feed.—"A. Q. McG.," Estes Park, Colorado. The economy in cutting feed consists in the prevention of the waste which occurs with long feed, and also in the less consumption. It is very certain that a less weight of long fodder, cut, moistened, and mixed with ground grain, will keep an animal in equally good condition as a larger quantity of uncut fodder with ground grain. This effect occurs in two ways; the animal exercises less muscular exertion in masticating the prepared food, and the food is more perfectly digested. We have found the saving to be from a fourth to a half with some animals that are of unusually wasteful habits, or of inferior digestive powers.

Value of Pond Sediment.—"H. T.," Milltown, N. B. The soil left by the draining of ponds is generally very valuable for meadow land. A pond that is filled with mud to within 6 inches of the surface, may doubtless be drained by cutting an outlet to carry off the water. The mud will settle considerably, and the drain may need to be 5 to 6 feet deep. As soon as the surface is dry, it should be sown with grass seed, lest bog grasses spring up and produce a growth of tussocks, which would spoil the surface. Open ditches should be cut through the ground as soon as the surface is solid enough to work upon. The reclamation of such land will require probably two years, if not more.

Spaying Sows.—"J. W. P.," Wells Co., Ind. There is no certain way of preventing sows from breeding except by spaying. There are different other methods proposed, but they are all shams and humbugs.

Pennsylvania Corn.—"C. C. E.," Waynesburg, Ohio. A very large and prolific variety of yellow corn is grown in Southern Pa. We have grown it, having 32 rows, and shelling nearly a quart to each ear. But it requires very rich soil and a climate equally warm as that where it originated.

Concrete for Cellar Walls.—"T. E. W.," Clinton Co., Ohio. Concrete makes a very strong cellar wall. It is stronger and better in every way when made with hydraulic lime (or cement), than with common lime, although a good concrete may be made with common lime. We have built walls of each kind of concrete, and much prefer the hydraulic cement.

Artesian Wells.—"J. L. B.," Greenland, W. Va. Water can not always be made to overflow from a well, however deep it may be. There must be an underground stream tapped, which has its source above the level of the mouth of the well, and the stream must be confined by an impervious bed of clay or rock. Unless these conditions exist, no flowing well can be had.

Plowing Under Green Crops.—"C. S.," Syracuse, N. Y. It is a great mistake to suppose that land too poor to grow anything, can be restored by growing and plowing under green crops. Green manuring is useful to keep good land in good condition without other manure. But to raise the condition of poor land in this way, would be to get something out of nothing. The easiest manner of restoring poor soil, is to use some artificial fertilizer to grow clover, and then plow under the clover.

Sulphate of Copper as a Tonic for Pigs.—"R. L. C.," Sulphate of copper, properly used, is a valuable tonic for animals. The proper quantity is from half a dram to two drams for a horse, ox, or cow; 10 grains to a sheep, and 15 grains for a pig. It is poisonous when given in large quantities, as are almost all medicinal drugs. Sulphate of iron (copperas) is less active than the sulphate of copper (blue vitriol), and is used in doses four times as large. It requires a knowledge of the case to distinguish the need for the one or the other of these drugs.

To Split Knotty Logs.—"B.," Cheshire Co., N. H., writes: Take a six or seven-quarter auger for large, tough, knotty logs that are to be split. Bore into the log you wish to open, for one-third or one-fourth its diameter, put in a good charge of powder. Take a piece of wood six or eight inches long, suitable to make a spile or plug—pine is the easiest to work, and the best—run a ¾ hit through the tap—that is, to be fitted to drive tight and firmly to the charge—then prime and set a match that will give time to get out of the way.

Nuts and Nubbins.

"Sealskin sacks are worn longer." Same way with all the rest of our clothes.

When a man has no bills against him he feels as though he belonged to the nobility.

"How's your husband this evening, Mrs. Quaggs?"—"No improvement, doctor, one way or the other."

A little boy went to his father crying, and told him that he had kicked a bee that had a splinter in its tail.

Among the items in a plumber's bill are: to searching gas leakage, fifty cents; to having found it, one dollar.

"I'ze right," shouted a military officer to his company. "Well," grunted a green private, "nobody said you wasn't right."

A young housekeeper, when her attention was called to a very dusty chair, remarked: "Nobody has sat down on that to-day."

A Rochester man hung a sign in front of his place of business, which reads: "Twenty-five loafers wanted to stand here." They don't stand there.

"Nice little girl: 'Oh, do let me see you drink.'"—Captain Grogson: "Why, my dear?"—"Nice little girl: 'Because ma says you drink like a fish.'"

Some Indians use scalping knives of tortoise shell, probably on account of the old fable in which the tortoise was alleged to have got away with the hare.

"A polite man," said the Duc de Morny, "is one who listens with interest to things he knows all about when they are told by a person who knows nothing about them."

A mother seeing her little four-year-old nearly asleep in her chair, asked if she had not better go to bed.—"Oh, no, mamma; I only shut my eyes to keep the dust out."

"How does the new cow answer?" asked one man of another who had lately purchased a cow.—"I really can't say," he replied, "for I've never asked her any questions."

"My dear," asked Mrs. J. of her husband, on coming home from church the other day, "what was the sweetest thing you saw in bonnets?"—"The ladies faces," was the bland reply.

Physician.—"Your pulse is still very high, my friend! Did you get the leeches all right day before yesterday?"—**Patient.**—Yes, sir, I got 'em right enough; but mightn't I have 'em bled next time?"

The following conversation took place recently in an hotel: "Waiter."—"Yes, sir."—"What's this?"—"It's bean soup."—"No matter what it has been; the question is, what is it now?"

A Boston paper says: "A butterfly was caught at the South End yesterday."—It may be safe enough to catch a butterfly at the South End, but when you go to grab a wasp you want to catch it at the northeasterly end, shifting westerly toward the head.

"Ma," said a thoughtful hoy, "I don't think Solomon was so rich as they say he was."—"Why, my dear, what could have put that into your head?"—"Why, the Bible says he slept with his fathers; and I think if he had been so rich, he would have had a bed of his own."

When you see a lady on the street stop and suddenly kick and reach backward and downward, don't be alarmed; it is not a brickbat she is after. As soon as she shakes out the old oyster cans entangled in her trail, that same sweet smile will return; and everywhere the street contractor hails the woman with a trail as a blessing.

A gentleman who happens to own a paddock, and who had tried every effort and threat in vain to prevent tramps from making a short cut through it, was eventually persuaded to stick up the following notice: "Beggars, Beware! Scolopendriums and Polypodius planted here." The effect was marvellous, and the annoyance ceased.

The young ladies of Vassar College feel quite at home in studying chemistry. They are at once on friendly terms with Sal Ammoniac, Sal Soda, Sal Prunelle, Mag Nesium, Moll Yhdenum, Ann Timony, Cad Mium, Ruth Enium, Pete Roleum, Al Umium, Doll O'Mite, Bessi Mer's Process, Mary Otte's Law, and Ann Alysia.

A young man, on becoming affianced, was desirous of presenting his intended with a ring appropriately inscribed; but, being at a loss what to have engraved upon it, he asked his father's advice. "Well," said the old gentleman, "put on, 'When this you see, remember me.'" The young lady was surprised, upon receipt of the ring a few days after, to read this inscription: "When this you see, remember father."

Mr. Basingbal (city merchant)—"Most convenient! I can converse with Mrs. B. just as if I was in my own drawing-room. I'll tell her you are here." (Speaks through the telephone.) "Dawdles is here—just come from Paris—looking so well—desires to be," etc., etc. "Now you take it, and you'll hear her voice distinctly."—Dawdles—"Weally!"—(Dawdles takes it.)—The voice—"For goodness sake, dear, don't bring that insufferable noodle home to dinner!"

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do. **2-year-old BULLS**, do. do.
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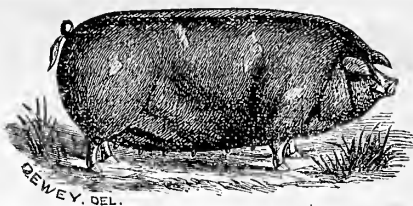
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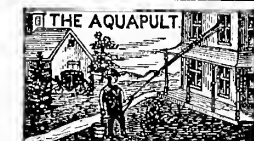
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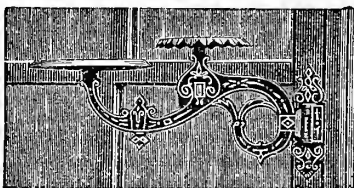
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With or without Reading Table. For sale by the trade. Manufactured by F. A. SINCLAIR, Mottville, N. Y. Send stamp for Illustrated Price-list. Be careful that the chairs are stamped with my name in full; others are IMITATIONS.

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Send for our Illustrated Catalogues.

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Cases of 125 movable letters, etc., with printing apparatus, \$1.50 by mail; sample of Type and Circular 6c. Address **RUBBER TYPE CO., Mallet Creek, Ohio.**

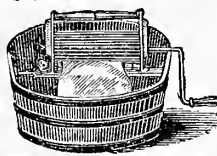
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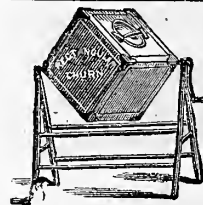
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Cheap, because so well made, durable, and efficient. Nine sizes made, churning from one, to 150 gallons. Warranted to be exactly as represented. Sold by all dealers in really first class Farm Machinery. **PORTER BLANCHARD'S SONS, CONCORD, N. H., Sole Manufacturers. Send for Circulars.**



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Simple, efficient, and always reliable. No inside fixtures. Fifty per cent in labor saved over any other churn. Five sizes made. The Highest award given over all competitors at the late Dairy fair in Chicago. An energetic man wanted in every town, to act as agent. One churn sent at wholesale where we have no agent. **CORNISH & CURTIS, Fort Atkinson, Wis.**

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with a cup for each print, will deliver print butter to market in perfect shape. Also carriers without cups, for square or oblong prints. Prices low.

Can now furnish Initial Stamps for printing butter, any Initial or Initials to order. Sent by mail. Prices and circulars on application. **E. L. RESH, Lancaster, Pa.**

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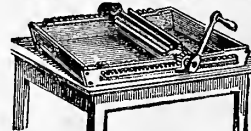
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BUTTER WORKER.



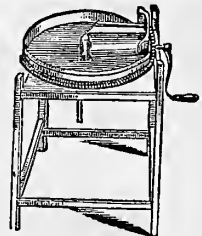
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We guarantee it the best and cheapest Machine in the world. No hard labor. Mixes the salt thoroughly, and takes all the milk out, with five to ten minutes work. Circulars sent on receipt of stamp.

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The Best Presents Ever Invented for Boys and Girls.

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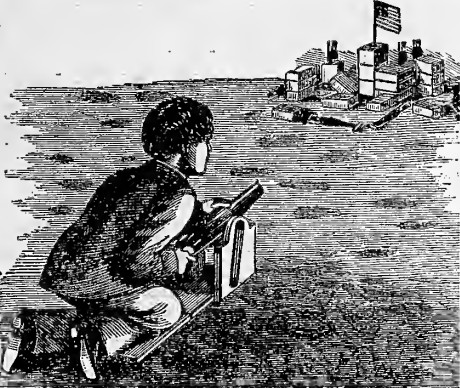


Every child, and man and woman too, will laugh over this group of teacher and scholars in the "district school," and thousands of parents will recall with great delight their own

experiences in childhood. The grave "master," seated by the desk, with his "whisking stick"; the boys and girls with their books; the "little lamb" that has followed his young owner into the school; the "dunce" and his cap, and the altogether comical appearance of the whole company, make this one of the most attractive toys of Crandall's invention.

Price per Set, \$1.00; by mail, prepaid, \$1.20.

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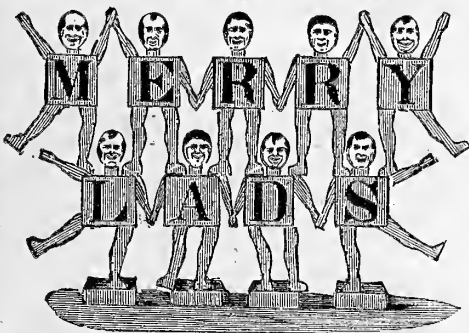


The greatest amusement of the age! Recreation at home for all ages, and for all seasons! Crandall's Heavy Artillery is made up of a large Cannon, complete, which throws a 1½-inch Rubber Ball to the distance of 25 feet or more, and Sixty Blocks (Red, White, and Blue), to build up Fortifications, also a Company of Soldiers, with Officer and Flag, to garrison the Fort. The Game is to beat down the

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Price per Set, \$3.00. Expressage to be paid by the recipient.

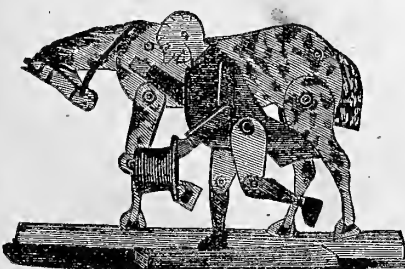
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No more long faces and no more tears over A B C! Here we have amusement and instruction combined. Each box contains twenty-seven little men, each representing a letter, with arms, legs, and jolly faces. This set of Blocks is susceptible of more changes, and a greater variety of forms and combinations than any Spelling Block ever offered to the public. The Pieces are durable, the Letters plain, the Faces mirthful, and the Amusement afforded by them unlimited. They please while they instruct, and are a source of enjoyment to young and old.

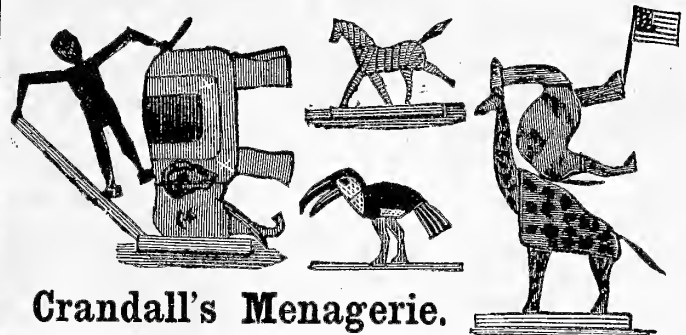
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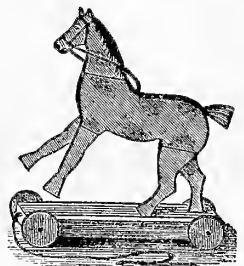
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Here is something that will make glad every little boy who gets it. The Toy Horse is about 6 inches in height to the tops of his ears. He stands upon a four-wheeled base, all ready to be set in motion by his owner. He is made up in pieces and can be taken apart and laid snugly away in his box.

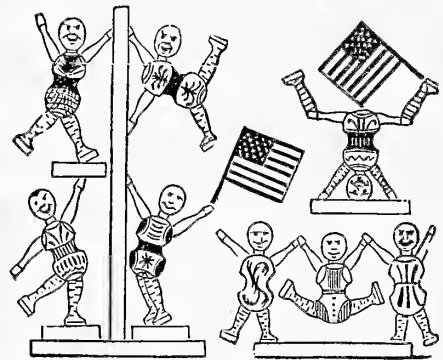
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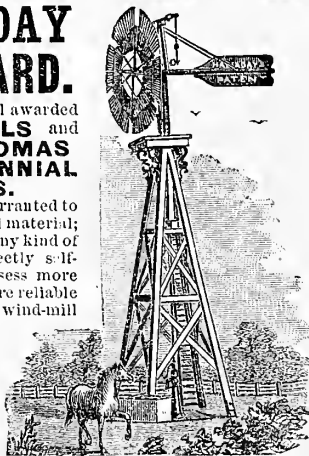
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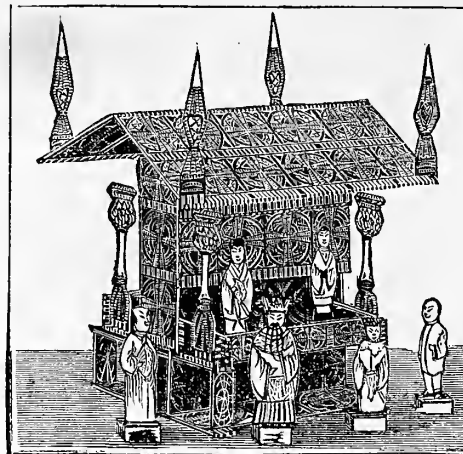
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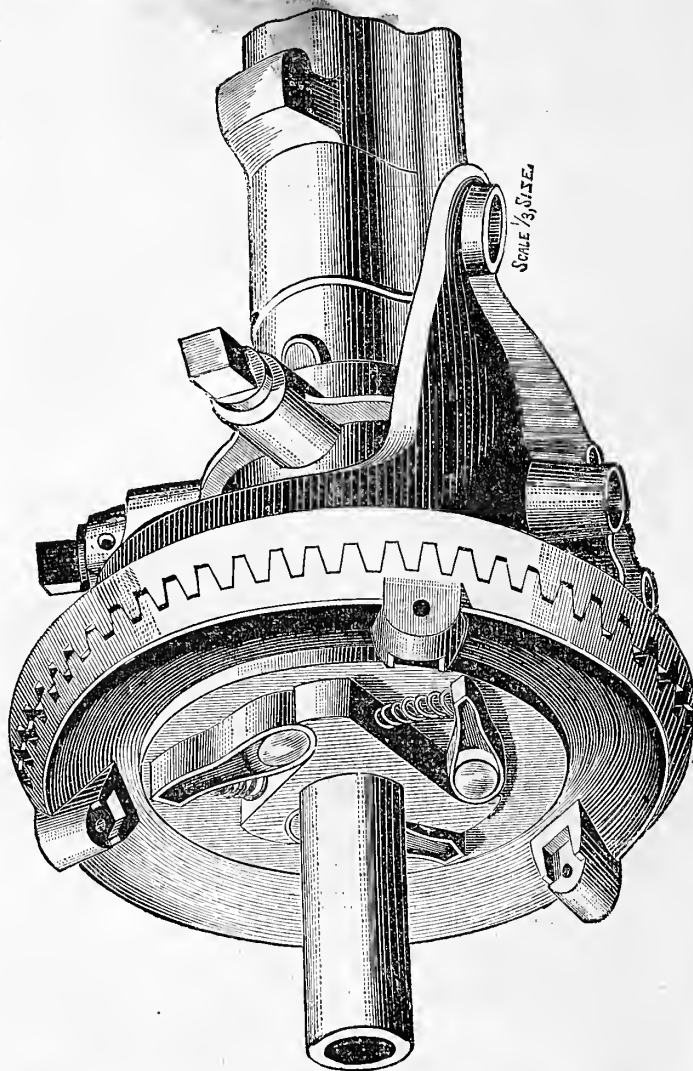
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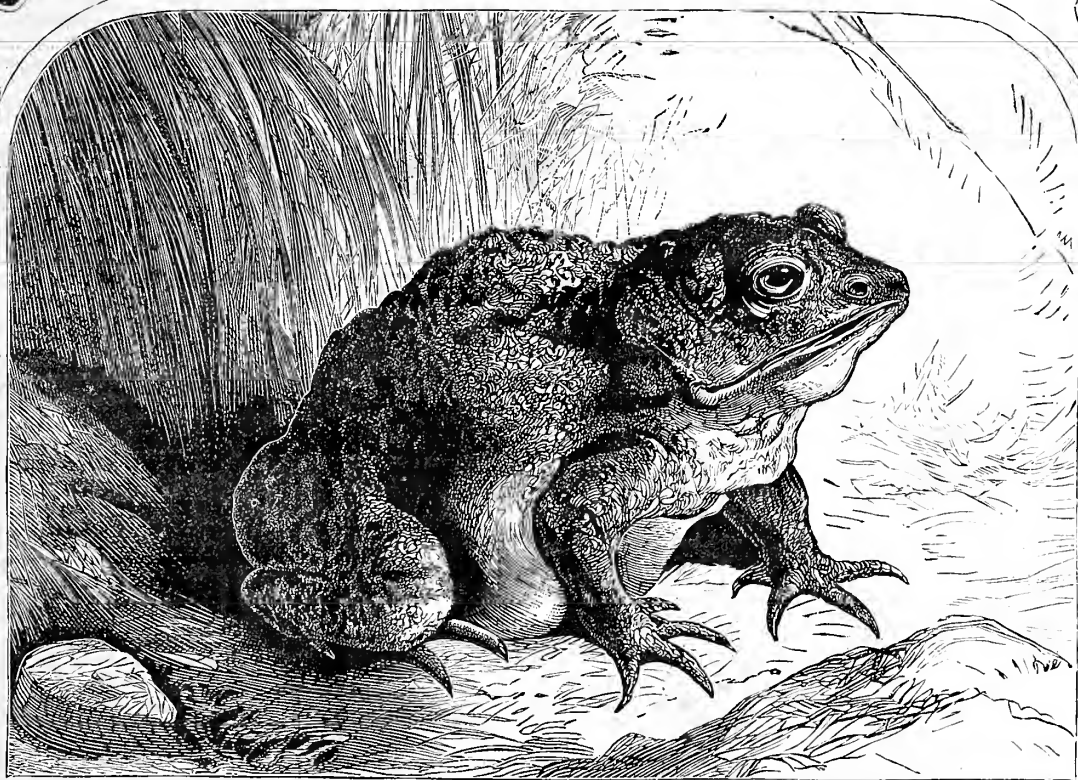
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NEW SERIES—No. 378.

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Calendar for this Month.

Day of Month.	Day of Week.	Boston, N. Eng. land, N. York State, Mich. and Wiscon. Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.
1	M	4 27 7	41 53	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
2	T	4 27 7	41 53	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
3	W	4 28 7	40 52	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
4	T	4 28 7	40 52	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
5	F	4 29 7	40 52	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
6	S	4 30 7	40 52	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
7	S	4 30 7	40 52	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
8	M	4 31 7	39 51	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
9	T	4 32 7	38 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
10	W	4 32 7	38 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
11	T	4 33 7	37 1	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
12	F	4 33 7	37 1	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
13	S	4 35 7	36 3	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
14	S	4 35 7	36 3	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
15	M	4 36 7	35 8	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
16	T	4 37 7	35 8	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
17	W	4 37 7	35 8	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
18	T	4 38 7	34 9	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
19	F	4 39 7	33 9	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
20	S	4 40 7	32 9	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
21	S	4 41 7	32 9	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
22	M	4 42 7	31 10	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
23	T	4 43 7	30 11	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
24	W	4 44 7	29 11	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
25	T	4 45 7	28 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
26	F	4 46 7	26 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
27	S	4 47 7	25 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
28	S	4 48 7	24 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
29	M	4 49 7	23 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
30	T	4 50 7	22 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7
31	W	4 51 7	21 0	4 33 7	35 8 45	4 38 7	29 8 43	4 38 7	29 8 43	4 38 7

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHAS'TON	CHICAGO.
1st Quart.	7 33 mo.	7 34 mo.	7 34 mo.	7 34 mo.	7 34 mo.
Full Mo.	11 6 11 mo.	5 50 mo.	5 47 mo.	5 35 mo.	5 3 mo.
3rd Quart.	22 7 32 mo.	7 29 mo.	7 8 mo.	6 56 mo.	6 26 mo.
New Mo.	29 4 56 ev.	4 44 ev.	4 32 ev.	4 20 ev.	3 56 ev.

Terms, Publishers' Notices, etc.

Subscription Rates of the American Agriculturist, postage prepaid by the Publishers: One Copy, \$1.60 a year; Two Copies, \$3; Three Copies, \$4.20 (\$1.40 each); Four Copies, \$5.20 (\$1.30 each); Five to Nine Copies, \$1.25 each; Ten to Nineteen Copies, \$1.20 each; Twenty Copies and upwards, \$1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid. Remittances, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. Bound Volumes from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.20 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—Any Numbers of the paper issued for 21 years past, sent post paid for 15 cents each; or any full year, sent unbound, for \$1.60. Clubs of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Premiums for State and County Fairs.—We would again remind those who make up schedules of prizes for State and County Fairs, of the fact that Books for the Farm, Garden, and Household, or

a year's subscription for the *American Agriculturist*, are among the most attractive and acceptable Premiums which can be offered. We invite correspondence upon the subject. Such premiums as we suggest, have, in past years, been offered at many Fairs, and have uniformly given great satisfaction of those who have secured them.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of new subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings. Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners; all would find it pay to do so.—*Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc.* because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—*Please call the attention of your German neighbors to this paper.* It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

WHY Advertisers find it Advantageous to use the columns of the *American Agriculturist*. (1.) They here reach more active, wide-awake, enterprising, buying people, than through any other journal in the world. For a dozen years or more the actual circulation of this journal has averaged over 100,000 copies sent to regular paying readers—not specimen copies thrown around the country, nor mere "spurt" editions got out occasionally to talk about. By a system of exchanges among themselves, very many copies are read regularly by two to six or more families. The readers are the wide-awake, enterprising class who are on the look-out for improved articles of all kinds. The *American Agriculturist* has a large circulation among intelligent Professional men, Merchants, Mechanics, etc., who look to it as a guide for the care of their homesteads. The actual, bona fide, subscription circulation of the *American Agriculturist* is certainly greater than the combined circulation of any other seven or eight similar journals in the country, and probably greater than that of any other ten or twelve journals of like character. (2.) Each number is kept on hand a month at least, and tens of thousands of copies are preserved every month, by binding or stitching into a volume. (3.) The advertisements are neatly and attractively printed. (4.) Most important is the fact that none but good parties are admitted—no nostrum, no quack medicines, nothing deceptive in form or substance, is allowed in the advertising columns. Advertisers are not only thus in Good Company, but the readers know these rules, and they therefore have confidence in the advertisers, and patronize them far more readily. This fact alone makes the advertisements in the *American Agriculturist* many times more valuable than the same space in most other journals, even if it had only the same number of readers. There is scarcely another journal in all the country, not even among the "religious press," that is so strict in its rules as to the character of the advertisements taken.—The best proof of the value of this journal, is the fact that a large number of business men have constantly advertised in it for twenty years or more (and still do) because they find that it pays.

In Changing Your Post-office, always give us plainly the former P. O. as well as the new

one; and do it a month in advance. One number will probably go to the old address, as the mailing wrappers are written some weeks ahead. It is well to provide for having one number forwarded, when removing to a new P. O., if you have not given us at least a month's notice in advance of your change of address.

WHERE TO BUY.—A good Directory for procuring Implements, Seeds, Plants, Fertilizers, and many other things—from trustworthy, responsible parties, who have both the *ability* and *intention* to do what they promise—is constantly at hand in the advertising columns of this Journal. We aim to admit no other parties, and exclude medical nostrums, quackery, deceptive announcements, etc., in order to make the business pages, as well as the reading columns, a reliable source of information. It always pays to read all the advertisements through carefully; in doing this one can scarcely fail to get some new idea that will sooner or later come into account. In corresponding with advertisers, it is useful, in several ways, to always inform them through what journal you made their acquaintance.

An ATTRACTIVE CATALOGUE, finely illustrated, of **BOOKS on Rifle-practice, Hunting, Fishing, Boating, and Out-door Exercises generally.**—The rapid development of Field Amusements in this country, and the increased demands for Standard Books on these subjects, has induced the ORANGE JUDD COMPANY to establish a **Special Department of Books** on the above topics. They now have in press, and will publish in a few days, a Beautifully Illustrated Catalogue, entitled "*Sportsman's Library of Standard Books.*" The work has been prepared with great care, and embraces not only all their own, but other publications of any value and interest upon the subject referred to. Very many of the illustrations are drawn from life, and faithfully portray the points and characteristics of Game Birds, Fishes, Horses, Dogs, etc., etc. The Publishers are now prepared to supply the Trade, and individual purchasers, with any of the books included in the Catalogue, which covers the entire ground. They invite their friends and the public generally, to call and examine the books in this Special Department. Copies of the Catalogue, which is an interesting work of itself, can be obtained by the trade. (It will be mailed to individuals desiring it, on forwarding their address and a couple of 3-cent postage-stamps.)

Harris' Insects Injurious to Vegetation.—A new edition of this valuable work is now in press, and will soon be ready. It is magnificently illustrated with 278 fine wood-cuts, and eight carefully engraved steel-plates, of full-page size, containing 95 figures. It is issued in two styles, both finely gotten up, but in one the steel-engravings are beautifully colored by hand, and the work bound with beveled boards and red edges. Price of colored edition, \$6.50; plain edition, which is also elegant, \$4. Sent post-paid by Orange Judd Company, the publishers.

Silk is a wonderful product of insect industry. It seems like spun spider-webs, and indeed it is but little coarser. And when such a concern as the Nonotuck Silk Company, of Boston, make their whole business the manufacture of "*Corticelli Silk*" thread, it shows the marvelous adaption of nature's minutest creations to the wants of man, when intelligently taken advantage of.

Large Grain Receipts and Sales.—The comprehensive tables on page 245, condensed from a great mass of figures, are interesting this month; rightly studied, these tables are always instructive. Table 2 shows RECEIPTS of ten times as much wheat for a month past this year, as compared with 1877; the increase in flour receipts (110,000 bbls.) is equal to half a million more bushels of wheat. Corn, Rye, and Barley show similarly. The SALES of Flour, Wheat, Rye, and Oats are correspondingly greater this year. Table 3 makes a still more gratifying exhibit, running the comparison back for half a dozen years. Every bushel sent abroad pays debts, or brings gold, and by so much adds to our national wealth.—Reducing the flour to wheat, we exported, from January 1 to June 11, of Wheat, Corn, Rye, and Barley, 39,310,000 bushels, against only 14,772,485 bushels last year—an increase of nearly 25,000,000 bushels, or nearly 2½ times as much.

Buchan's Cresylic Sheep Dip.—"D. S.," Joilet, Ill. This sheep dip has for its base, a preparation of carbolic acid, which is fatal to insects. It is therefore used to cure scab in sheep, also to kill the ticks which infest them. A dipping in the fall is always advisable for every flock as a preventive, if not a cure.

Information About Sheep-raising.—"J. H. H.," Ligonier, Ind. Although agricul-

trists in general are remarkably free from selfish jealousy, and readily impart information about their business to novices, yet it must be remembered that business men have quite enough to do to attend to their own affairs without being called upon to give instruction to every one who may desire it. We can not, therefore, give the names of persons who are prominent in any particular branch of agriculture, who would not thank us for the overwhelming number of letters they would undoubtedly receive,—a veritable surprise party, and one of the most unwelcome sort. You will find all the information you want about sheep-raising—the best climates, soils, breeds of sheep, and management, in "*Stewart's Shepherd's Manual.*" Price \$1.50.

When to Use Lime or Ashes.—"J. M. P.," Vienna, Ill. They may be spread at any time in the fall or winter. Lime dissolves slowly, but most readily, in the coldest water. The potash of the ashes that may be dissolved out will be retained in the soil.

Fertilizers for Worn Out Land.—"S. R. L.," Ullin, Ill., and W. A. R., Delphi, Ind. Land so run out by wheat-growing as to be so poor that it will not grow clover, can generally be brought into good condition by using 200 to 300 lbs. of guano per acre, or of the Stockbridge or Mapes' rye manure, and sowing winter rye. When the crop is nearly ripe, plow it under; then sow rye again, and plow that under. If the second crop will grow without manure, don't use any, but save it for the crops to be harvested. As soon as the land is rich enough, sow clover; at first if possible, with use of fertilizers, as indicated for rye. Cut the first crop of clover, and plow under the aftermath, as then a larger mass of roots will have developed in the soil.

Let Cancer Doctors Alone.—It is greatly to be regretted that some, even of the religious journals, of the highest character, admit into their columns the advertisements (and "puffs," too,) of "*Cancer Doctors.*" We could say a good deal on this subject, and may do so if it seems to be needed by our readers; but will here only state that no heed should be given to a single one of these advertising curers of cancers, no matter how highly commended. A real cancer is a very rare thing; it is so marked that any good physician will know it; and all possible means of alleviation are understood, or easily accessible, to the regular medical profession, and the best advice is obtainable at regular rates. The Cancer Doctors (offering free to "clergymen and the poor," as they can well afford to do, a penny-worth of caustic, for the advertising they thus get,) grow rich on large fees from others. They easily persuade a nervous person that a colored spot, or eruption, or sore, or wen, is a "*cancer*;" they apply caustic, and remove it, and get the praise, and puffing, and notoriety, and patronage, arising from the reputation of having cured an actual cancer—which they have not done. They are generally shrewd enough to invent excuses for not curing a real cancer, when they happen to get hold of such a case. Cancers may sometimes be a little alleviated by a good, regular physician; it is not probable that a real cancer was ever cured. All the cures heralded are cases that needed no cancer doctor's application.

Milking-tubes.—"A Subscriber," who, when he "*blows up*," might give his real name, is surprised that we should recommend milking-tubes or machines, believing that the suction of the calf is the proper method of milking. He suggests introducing milk into the stomach through tubes as a parallel case, and that, therefore, the milk-tube is unnatural and improper. So we thought once, but a stubborn fact in the shape of a nervous cow with sore teats, and several pails of milk upset, and sore arms and shins, changed our views. The writer has been for a month past, and is now, milking all his cows with the machine, and has no objection to it, upon any account, but many reasons to rejoice that he was induced to test it, in spite of some reluctance.

Fowler's Sale of Jerseys, at Herkness's Bazar, Philadelphia, a few weeks since, disposed of some fine animals at fair prices. If the sale to come off this month at Cincinnati shall include as good animals as this, the breeders of that region will get some fine Jerseys. One feature of Mr. Fowler's sales, not too common, is that they are always actual sales, and are to be commended in that as setting a good example to those people whose auctions have compelled many to state in their advertisements that theirs were to be *bona fide* sales, as if the public expected the hiding-in.

An Explanation is desired by the owner of the stock mentioned in "*Among the Farmers,*" in the June number, under a "*third sale*," and as a "*closing out sale.*" His reasons for having some of the cattle bid in, were as follows: The sale was advertised in the *March American Agriculturist*, but by mistake the card

was omitted from the April issue, although the sale was in April; a correspondent wrote to another journal that the sale was to take place in March, and it was a stormy morning; for which three reasons many were kept from the sale; and, further, there was a serious sickness in his family, which prevented proper attention to the auction. So the owner claims that he was justified in the course pursued, and was endorsed by his friends.

Oil from Pea Nuts.—"W. J. D.," Red River, La. Pea nuts contain 30 to 40 per cent of oil, and yield besides about 53 to 63 per cent of cake, which is a very nutritious feeding substance. The process of extracting the oil is in no way different from that used in the linseed, cotton seed, or castor bean oil manufacture. The nuts are ground; the meal is put into hair-cloth bags, and these are pressed between heated metal plates in a very powerful hydraulic press. We can not give the cost of the machinery precisely, but \$1,000 will procure sufficient to work up 2,500 bushels per year. D. Kahnweiler, of 120 Center St., N. Y., would probably be able to give some information as to cost of machinery. A 6-horse power engine would be sufficient for a small mill.

Incubators.—"J. P. W.," St. Louis. The incubators which have been described in the *American Agriculturist* are patented, and any person who makes them without authority from the patentees would be liable to prosecution. Besides, these machines are so sensitive in their use that, unless perfectly well made, they would not be effective.

Cotton-Seed Huller.—"R. L. S.," Cheneyville, La. Kahnweiler's cotton-seed huller is a very effective machine, costing only a moderate sum in proportion to its usefulness, to any Southern farmer who wishes to use cotton-seed, either for a fertilizer or for feed. For use in oil-mills, it is a standard machine.

Nitrate of Soda for Grass.—"Subscriber." This is an excellent fertilizer for grass, either in spring, or for use immediately after cutting, and is beneficial on almost any kind of soil, though its effects are more conspicuous on light land. But the retentive power of the soil for it is so slight, that a heavy rain coming just after its application will wash it into a light soil beyond the reach of the roots. Moreover, it should be remembered that nitrate of soda has only one element of fertility—the nitrogen, in the form of nitric acid—and is entirely lacking in potash and phosphoric acid. For starting grass, it has no superior, but can not be relied on as an exclusive manure. "Now that an agency of the Peruvian Government has been established in this country for its sale," it should be obtainable at a low price.

The Prospect for Dairying.—"M. E. H.," Story Co., Ia. Good Western butter brings as good prices as any other in market, and an extra good quality always sells well. There are "*ups and downs*" in all branches of business, yet it is a fact that dairy-farmers make more money, and get it in a more regular way, than grain farmers. With good pasturage, water, and grass land, dairying is more promising than grain-growing. For grinding the grain, the "*big giant*" mill would be useful; and a plan of a dairy-barn, that can be made small or large, was given in the *American Agriculturist* for June last.

Connecticut Experiment Station.—Bulletins 12, 13, 14, and 15, have analyses from 117 to 143. It is evident that the New Haven chemists place the value of nitrogen, potash, and phosphoric acid at a much lower rate than do the manufacturers; for in all these 32 analyses, only eight have an estimated value equal to the cost. These are Peter Cooper's Ground Bone (two samples), Forrester's Potato Fertilizer, Peruvian Guano, G. W. Baker's Bone-manure, Rafferty & Williams' Bone-meal, and several samples of muriate potash. As some of these valuations differ materially from those of other good chemists, the basis of calculation should be given, when publishing reports adverse to men believed to be reliable; although there are some in the lot we should feel no mercy for.

Foot-Rot in Sheep.—"J. B.," Lawrence Co., Pa. Foot-rot in sheep is caused by a decay of the horn of the sole and crust. It becomes malignant and contagious when the products of the decomposition poison the adjacent tissues, and cause an acrid discharge which conveys infection to the feet of other sheep. To cure it, the hoof should be pared; all rotten horn cut away; the diseased parts dressed with some caustic substance, such as carbolic acid, or a strong solution of sulphate of copper, and the diseased animals kept in a dry, clean yard, or a fresh grass-plot. Infested yards or pastures should be plowed up, or left unoccupied by sheep, for at least two years. For fuller account of this disease, refer to "*Stewart's Shepherd's Manual,*" price \$1.50.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1878.

Hints for Work.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.]

The Harvest. after all the promise of the early season, is not much above an average as to yield, although the acreage is larger. What may be the products of fall sown grain, can not be ascertained until the crop is threshed and measured. From general indications it cannot be expected that the sanguine hopes held in spring will have been verified. It is probable that the failures mostly result from the depredations of insects, and defective fertilizing, which, as a rule, happens every year.

The Hessian Fly has done much damage in early sown wheat. Experience has shown that the means for exemption from its depredations that have been most successful, have been the use of fine salt, at the rate of 6 bushels per acre, and fine lime, soon after the plants have become large enough to attract the fly; late planting, thorough preparation of the soil, and the removal of all rubbish and weeds; ample manuring of the soil so as to stimulate a vigorous growth, and abundant stooling from the root-buds, by which new spikes are thrown up in place of those injured; and lastly, by sowing only the most vigorous and hardy stemmed varieties.

In the writer's Experiments, the past season, the "Clawson," and the "Silver Chaff" wheats, sown on the 29th of September, and dressed with only 100 lbs. per acre of artificial wheat-manure (with 200 lbs. more in the spring), were completely exempt from the attacks of the fly.

A Clover-sod for Wheat.—No other preparation for wheat is so generally successful as a clover-sod plowed under early. This method, however, upsets the usual rotation in which clover follows wheat. But a good wheat crop is better than a poor rotation; and the clover may come with the barley after corn, following a crop of turnips, sown upon wheat stubble. If we can produce 40 bushels to the acre, it will pay to grow wheat even with some trouble.

What shall be done with the Clover-sod?—It may be considered that a good crop of clover actually adds to the future capacity of the land instead of exhausting it to any extent. This occurs through the large addition to the soil, of nitrogenous and other organic matters derived from the atmosphere, and fertility brought up by the deep-searching roots. To secure the most benefit, the second crop should be plowed under early in September, with the seed, which is not lost, but returns to us again as a new growth of clover, when brought to the surface by reploting. If a crop of seed is desired, we should encourage a large growth, by top-dressing it at once, and thus put the soil in the best condition for wheat.

Quack Grass.—Careless farmers are laying up a store of trouble for themselves in permitting their farms to become overrun with quack grass, *Triticum repens*; there is no more troublesome weed, and no other that increases so fast by neglect. But the July and August sun will be a match for even this weed if we give the solar heat a chance to roast its roots. The cultivator is a better implement than the plow or harrow; and a "grubber" with curved teeth, which tear out the roots and gather them on the surface, is the best kind of gatherer.

Summer Fallows, once so frequent, are now considered of questionable value. As a means of improving the fertility of the soil, they are needless, now that we can procure artificial fertilizers at a less cost than that of the labor employed in the fallowing, and can raise a crop of roots or green fodder, that will clean the land and pay for the fertilizer several times over.

Oats, is generally the last of the small grains to be harvested, and is frequently gathered too late. If left until over ripe, the grain scatters badly; and

the appearance of an oat stubble always tells how much is lost. If at all over-ripe for cutting, oats should be reaped early in the morning, and never handled in the middle of the day. The straw is sufficiently valuable for feeding to make it worth while to cut the crop before the straw is entirely yellow from foot to head.

Corn.—We have noticed that the most successful producers of corn are always the last in the field with the cultivator. To "lay by" this crop in July is too early. The weeds thus have unnecessary opportunity to grow and mature seed. It is a question if it is not best to thin out the stalks more than is commonly done; to grow the grain crop by itself, with but two stalks, or even one, in a hill; and that for fodder by itself, with the stalks as closely set as possible for thrifty growth.

Growing Seed Corn.—Any grain can be greatly improved by selecting the best each year, and continuing to plant this for several seasons. No other grain-plant that we grow has so many abortive ears as corn. If we can make each of these productive, the yield can be greatly multiplied. If any farmer wishes to experiment in this way, he might begin this month by thinning out the plants, removing suckers, and encouraging the growth of the seed, instead of a useless amount of the stalk and leaf.

Fodder Crops.—Repeated plantings of fodder-corn may yet be made. Golden millet has proved a very productive fodder-crop for planting early this month; and the new "Pearl millet" is worthy of a trial. Cabbages set out upon early potato ground will give one of the very best fodder-crops.... Nothing else is better for milking cows than

Roots.—For planting this month up to the 12th or 15th, ruta-bagas, or Swede turnips, are excellent. Imperial Swede turnip is a new variety, that has been recently imported, and has been highly commended as yielding largely. No better ground than that from which early potatoes have been taken, can be had. Sow in drills 30 inches apart on rich soil, with 3 lbs. of seed to the acre. For later sowing this month and next, the "Greystone" turnip is a very prolific new kind, recently imported.

Early Potatoes, in many places, have fairly escaped the dreaded beetle, and are making a good crop. They should be harvested as soon as ripe, lest wet weather cause them to sprout. A second crop may be made by planting the earliest kinds the first of this month. Of all the new sorts, none have as yet displaced the Early Rose.

Late Potatoes should be free from weeds, and beetles; to suffer the leaves to be cateu off is a permanent injury to the roots. Generally it is the latest crop of beetles which does the most damage.

Buckwheat.—For a late crop, or one to occupy a rough piece of ground that needs mellowing, buckwheat may be sown up to the 12th of July. Half a bushel to one bushel of seed per acre is needed. A new variety, the "Silver Hull," is a beautiful, prolific, and valuable kind. We have sown timothy and clover successfully, with buckwheat, in July.

Live-Stock.—During the press of work the care of the animals must not be neglected. Plenty of good food and pure water should be given with regularity; the latter is specially important and necessary for health. They should be protected from flies and other insect pests, sheltered from the extreme mid-day heats, and kept clean. The ordinary sanitary rules which apply to our own health should be observed in regard to them.

Sheep should have a change of pasture. They are then more contented, and thrive better. A large field will not graze so many as several small ones of the same aggregate size. Give salt at least once a week. For scours, give a tablespoonful of castor oil; if continued, give a teaspoonful each of prepared chalk, and essence of peppermint, in a cupful of water. For stretches, which is only indigestion, common when the pasture gets dry, give an ounce of linseed-oil with a dram of ground ginger.

Pigs.—A run on a good clover stubble will be very beneficial. When confined in yards and pens, bedding of clean dry sand, several inches deep, will be found better than any other litter. An occasional sprinkling of a solution of copperas about the

yards, or a good dusting with ground gypsum, will act as a deodorizer and disinfectant. Young pigs should be forced just now, as fast as healthy growth will permit. Pork is advancing in value, and pigs may justly claim a little more attention than when it was worth but \$8 a barrel. Now is a good time to improve the stock. For November pigs, couple this month, and use a boar of some pure breed.

Poultry.—July chickens, if well cared for, will be large enough to go through the winter safely. After July we would set no hens, but set all possible up to the middle of the month. In the hot days of midsummer vermin breed very fast, and cleanliness alone will keep them in subjection.

Pests now run riot with the stock. The bot-flies are perhaps the worst. Wash their eggs from the legs of horses with warm water, or scrape them off with a knife. Protect cattle from their bot-fly, which lays its eggs on the loins, by rubbing a little crude petroleum on the backs of the animals. Tar sheep's noses to keep the sheep bot-fly from laying eggs in their nostrils. These means of prevention will add much to the comfort of the animals. By keeping stables clean and dark, the hateful black-fly (*Stomoxys calcitrans*), in general appearance so much like a house-fly, will be less annoying.

Notes on Orchard and Garden Work.

In former years we have suggested that if there was any time during the growing season in which the orchardist and gardener might "go a-fishing" with a clear conscience, it is during these months of July and August. It should be an especially favorable season for leisure this year, as—despite a few drawbacks—most of us have been able to keep well ahead of the work. To one whose work is always ahead of him, leisure never comes. In the term "going a-fishing" we include whatever takes the cultivator away from his "patch," and allows him to see what others are doing, and he may get quite as much recreation by fishing for ideas in the ponds and preserves of the orchards and gardens of other cultivators, as by the actual use of the hook and line. A week or two devoted to going among others engaged in similar pursuits—and this need not, of necessity, be very far from home—will give one a freshening up that will be worth more than all its costs, and the good influences of which will last all the year. To all who make use of the comparative leisure of mid-summer to visit the orchards, gardens, and ground of others, we have one bit of advice to give:

"Shut Your Own Gate Behind You!"

When you leave your garden, fruit patch, or grounds, of whatever kind, *shut the gate*, and leave whatever is behind it, there—don't take it with you. Recollect that when you visit the place of another, you go to see what *he* has to show, and learn what *he* has to teach. If you would be a welcome visitor, and be dismissed with a pressing invitation to come again, place yourself in a receptive mood; be for the time the attentive pupil and not the teacher. When others visit your place, will be the proper time to teach. Of all the intolerable bores who visit us is the man who brings his own place with him, and who, whatever may be shown him, at once institutes a comparison with his own, and at once begins to tell that "mine are much better than that,"—"I can beat you on so and so," and ignoring the thing before him tell us, "Ah, you should see my strawberries," "My roses," "My tomatoes," and so on all through—in short, the man who did not "shut his own gate behind him." Those who are so thoroughly satisfied with their own that they can not forget it for a few hours, should not visit, but remain upon the scene of their remarkable achievements—at home. We would not imply that one in visiting the grounds of another, may not, on occasion, drop a useful hint drawn from his own experience, or that he may not give his host any information that he may ask for. But we have been so annoyed at receiving visitors, and worse still, in visiting strange grounds in company with those whose only object in visiting appears to be to boast of their own affairs, that we

feel called upon to protest against it. Those who thoughtlessly fall into this unpleasant error, need only to be reminded of it, and they will sensibly avoid it. From the chronic boaster of his own achievements, we hope to be delivered.

The Benefits of Excursions

to other localities where others are following similar pursuits to our own, are not to be measured by the profitable hints we may pick up, but there is a mental and bodily relief that comes from a change of scene, which will allow one to return to the later work of the season refreshed, and with a spirit of content—for one who travels with his eyes open, can not fail to see that others, as well as himself, have their discomforts and drawbacks, and he is all the more disposed to meet his own with a brave spirit.

Orchard and Nursery.

On various occasions we have called attention to the value of early varieties of apples for a near market. This is a matter of special importance to orchardists in the Eastern States—indeed, to all fruit growers who live near large cities anywhere.

Winter Apples have a very long season, and if properly packed, may be transported for very great distances without any injury, and their slow ripening allows them to be stored for weeks or months. This peculiarity of late fruit allows the grower at a distance, where land is cheap, to compete with the orchardist near the markets. But with

Early Apples, the advantage is all on the side of the home market. Early varieties are short-lived—i. e., the period between the time when they are fit to pick, and that when they should reach the consumer is very short. Their general tender character does not allow of long transportation, as they are easily bruised, and soon fall into decay. For these reasons it is worth while for those who have orchards near large cities to consider the experience of the fruit-growers of Monmouth Co., N. J., and other localities near New York City. These gentlemen have ceased to compete with the orchardists in Ohio, Michigan, and other Western States, and find their profit in early fruit, of kinds which the Western growers can not possibly supply.

Care with Early Fruit is quite essential to success, and selection and neat packing are found to be as important with this as with any other fruit. The time when one would fill a wagon body with Early Harvest or Sweet Bough apples, put in a shovel and half-bushel measure, go to the nearest village and shovel up his fruit, has gone by. It pays to select the fruit, pack it in paper-lined new half barrels, or in baskets or crates, and put it upon the market as carefully as if it were pears or peaches. Thus treated, summer apples pay, as some growers know to their profit. Among the best and most

Profitable Early Apples, we enumerate the following, remarking that the list, as with fruit lists, will not answer for all localities: Benoni; Carolina Red June; Early Harvest; Large Yellow Bough; Primate, one of the best, but tender; Red Astrachan, tart, and excellent for cooking; Summer Queen, large and profitable; Tetofsky; William's Favorite. A variety locally called "Orange Pippin," is also very profitable in New Jersey.

Early Pears come to maturity rapidly, and if not gathered in time, many are apt to rot at the core. Selection and neat packing pay with these.

Thinning Fruit, however thoroughly it may have been done early in the season, will still need attention, and any excess may still be removed.

Young Trees.—See former months for the needed mulching, care against strangling with labels, etc. Much pruning may be avoided by occasional pinching the young growth, and removing entirely shoots that start where branches are not needed.

Blight.—We know nothing of this mysterious malady until the fatal blow has fallen. Cut away the lighted twig, branch, or tree, back to sound wood, and as a precaution, burn the dead prunings.

Insects.—It is not practicable to repeat every month and every year the whole insect story. In brief: *Borers* show themselves by "saw-dust," by gum, and by a flattened dead-looking place on the bark. Cut out or probe with wire....The

peach-borer is to be sought for just at or below the surface; the insect lays its eggs from now until autumn. A small mound of coal-ashes around the trees has been found useful....*Codling Moth*.—Pick up and feed to pigs all fallen fruit, or keep pigs in the orchard. Examine weekly the traps, whether of cloth or hay-hands, and kill those that have hidden there. Cloth traps may be run through an old clothes-wringer....*Slugs*, on pear, cherry, and other trees—little dark-green, slow-moving, slimy creatures—are killed by dusting lime, ashes, or even fine road dust....Late nests of the *Tent Caterpillar*, and those of the *Fall Web-worm*, now often abundant, must be destroyed wherever found.

Black Knot, often mistakenly supposed to be the work of an insect, should be cut out on its first appearance on plum and cherry trees.

The Time for Budding varies with the locality. Cherries and plums are ready first, and the pear next. The proper time is when well-formed buds may be had, and the stocks are in growing condition, so that the bark readily parts from the wood.

Fruit Garden.

Whatever is said on the general treatment of trees, and on insects, under Orchard, is generally applicable to trees in the Fruit Garden.

Grape-vines.—It was not necessary to give a special article on our "One Grape-vine" this month, the directions given on page 222 last month being sufficient for the treatment of the young vine. The growth this year of the new vine being preparatory only, all that can be done is to encourage the production of a single strong, vigorous cane. When the shoot has reached the top of the stake, let it hang over as it will. Keep the laterals pinched as there directed; pick off all beetles and caterpillars, and use sulphur freely if mildew appears.

Old Vines need similar treatment as to laterals, insects, and mildew. Chance shoots often appear on the arms, or other parts of the old wood. If these are not wanted, rub them off at once. But it sometimes happens that these come just where we would like to have a cane, to allow some change to be made in the training, such as to give us a new arm to replace one that is faulty; in such case we have only to encourage the new growth.

Summer Layering is an easy and rapid method of propagating the vine. As soon as a shoot of the present season, in a convenient place, becomes hard enough to handle—recollect that they break with the greatest ease at the nodes or joints—open a trench a few inches deep, and bury a few joints, removing the leaves from the buried part of the shoot; put down a stake, and turn up and fasten the end of the shoot to it, and treat this as if it were a young vine. In hot weather, and in light soil, it is well to lay a flat stone over the buried part of the vine, to keep the place moist.

Blackberries and Raspberries, as all cultivators should know, have biennial stems. The shoot which grows this season will bear fruit next summer; the stems now bearing fruit will die in the fall, to be succeeded by those now green and growing. Growers differ as to the propriety of removing the stems as soon as the fruit is off, some preferring to leave them until fall, under the plea that they will help strengthen the root. As good cultivators are equally divided on this, both parties claiming that practice warrants their view, we doubt if it is a matter of great importance, and would follow the most convenient course. New shoots, or canes for next year's fruit, should be cared for, and all that start, but are not needed, be hoed up as weeds. Raspberries may be stopped in their upward growth, by pinching, when at three or four feet, and blackberries at five or six feet. This pinching the tops will cause side branches to grow, which are to be kept in control by pinching when they have grown as long as desirable.

Black-cap and Purple-cane varieties do not throw up suckers at a distance from the old stool, but their new shoots start from the base of the plants, and these should be cared for as above suggested, as the branches that have fruited this season must be cut away in the fall, if not sooner.

Strawberries must be kept clear of weeds; if the single stool, or single row, method is adopted, then keep off all runners; if they are grown in alternate beds, then encourage the runners to take root in the intermediate spaces, to form a new bed.

Kitchen and Market Garden.

Notwithstanding this has been mentioned as one of the gardener's leisure months, it should, in one respect, be one of his most stirring months, so far as the soil is concerned. Those who wait until weeds need to be killed, before they set the cultivator, hoe, or rake, at work, lose much. Killing weeds is an important work, but is not the only good resulting from the frequent use of tillage implements. In a hard, compact soil, moisture readily finds its way up from below, and evaporates; if the surface is fine and loose, this loss of moisture ceases, and good cultivators know that a layer of loose soil is one of the best possible mulches. We have often advised the frequent use amongst the plants of a rake with long, sharp teeth; this allows of going over much surface that the cultivator can not reach, allows of rapid work, and besides being one of the most efficient weeders, leaves the surface of the soil in the best condition to resist drouth.

Asparagus.—See last month. The growth of tops will keep down all but a few coarse weeds, which should be pulled up as they appear.

Succession Crops will not be overlooked by those who would make the most of their gardens. Corn, Bush-beans, Beets, and Cucumbers may be sown.

Beets make in hot weather one of the best substitutes for spinach, and are sown by some for this purpose only; but we also keep up a succession of the Egyptian for their roots, as they are vastly preferable to late sorts.

Cabbages and Cauliflowers.—The late crop in the latitude of New York is set by the middle of the month. If to be worked by horse cultivator, make the rows three feet apart, and set the plants 18 to 24 inches apart, according to the variety. Examine the plants, and set none that have had roots, or have gone "blind," by injury to the growing point, or terminal bud. Set well down, and then press the earth firmly around with the foot.

Celery.—Around New York the main crop is set the first half of the month. Market gardeners have quite given up trench-planting, but set the plants on the surface in well-manured soil, and do not commence earthing up until the plants have made a large share of their growth. The dwarf varieties are grown almost exclusively. Ground that has been heavily manured for early crops of cabbages, etc., is laid out in rows three feet apart, and the plants set at six inches in the rows. Press the earth firmly around the plants, and keep them free from weeds.

Egg Plants, when fairly established, may be pushed with liquid manure every two or three days. Where potato-hugs abound, the plants have an almost hopeless "struggle for existence."

Squashes, Melons, and all of the family, are attacked by insects from the first show of the seed-leaf to the gathering of the fruit. Those which attack the foliage are had enough, but the borers, which enter the vine near the root, wait until the plant seems out of danger, and then bring it to a sudden end. Several advise covering the vine with earth for the first three or four joints from the root. More fruit is usually set than can be matured, and it is well to remove the excess. *Mem.*—Winter squashes, even when very young, are better for the table than any summer squash. Allow the vines of these to take root at the joints.

Sweet Potatoes need to be kept clear of weeds until they cover the ground. In northern climates, the vines should be prevented from taking root at the joints, which is easily done by running a rake or smooth pole under, and lifting them.

Tomatoes.—See last month for hints on supports. In field culture, the vines are allowed to spread upon the ground. Several have asked for directions for pruning tomatoes; the only pruning that we have found profitable (and we have tried the French system, where fruit is treated as if it were

worth \$1 each, instead of, as with us, 25 or 50 ets. a bushel), is that common-sense work which keeps the vine from becoming a matted thicket, and prevents them from being loaded with half-grown fruit when frost comes.

Insects on Tomatoes.—The potato-bug (Colorado) seems to be very freaky; sometimes it is a real pest on tomatoes, and again will leave them untouched. The worst enemy is the great sphinx caterpillar, as large as one's finger, which takes leaves, stems, and green fruit; wherever its coarse and abundant droppings are seen upon the ground, search for, and kill it. The horn on its tail is not a sting, and it can not bite the finger.

Turnips of the ruta-baga sorts, in the climate of New York, should be sown before the middle of the month. As soon as fairly up, sprinkle with air-slaked lime or a mixture of ashes and plaster. Cultivators differ as to transplanting in field culture, but in family gardens it is often desirable, to fill places that would be unoccupied. We know of none equal to the Long White French, for home use.

Odors and Ends.—Root crops of all kinds are usually too much crowded; one well developed and quickly grown root is better than two or three starved ones....Keep the soil stirred between the rows until the leaves prevent....If seeds are saved, do not, as is often done, take the leavings, but select the seed melons, squashes, tomatoes, etc., from the earliest and finest....For late crops of Sweet-corn, etc., choose the early and quickly maturing varieties; any excess may be dried.

Flower Garden and Lawn.

The mowing of lawns is directed by some to be done once a week, which may or may not be proper according to the season. Like other garden operations, this is one requiring judgment; the lawn should be mown when it needs it, and no oftener, and it is not generally likely to need it during a long continued drouth....The main work here is to keep everything in good order, and most of it has been anticipated by the Notes of last and earlier months....Dahlias of varieties with heavy branches will do better with three stakes instead of one....A large share of the ornamental shrubs may be easily propagated from the cuttings of this season's growth set in sandy soil under a well shaded sash....Nothing is more unsightly than faded flower clusters left upon shrubs and perennials, and these should be always cut away as soon as they have done their best, unless seeds are wanted.

Greenhouse and Window Plants.

The plants left in the house, whether few or many, need daily care in watering, ventilating, shading, and fumigating....Plants that have been set out of doors, unless plunged, are apt to suffer from too much heat at the roots; the pots should be screened, by the use of boards, or by some other method....The roots in pots that are plunged may make their way through the hole at the bottom, and finding fresh and congenial soil will often grow so rampantly that when taken up in the fall the larger share of the roots are on the outside; these can not be cut away without a severe check to the plant, and its occurrence should be avoided by occasionally turning the pots to break off such roots while young....Only a few plants will bloom continuously, winter and summer, and carnations, roses, and others that are expected to flower in the window or greenhouse next winter, should have their buds removed as they appear....House-plants that have been turned out of their pots and set in the garden, will often grow during the season to a size that unfits them for their former use, and the better way is to start new young plants from cuttings to take their places....The so-called "Saucer System" of striking cuttings will answer most of the wants of the amateur in mid-summer. It is simply to take a dish that will hold an inch or so of pure sand, put in cuttings of new and tender shoots, and keep them exposed to full sun, and at the same time to keep the sand always—not moist, but "sopping wet,"—in fact, in the state of mud. Those who have never tried this will be astonished at the large share of cuttings that will take root. When rooted, pot off in small pots of good open soil.

Commercial Matters—Market Prices.

		May 13.		June 13.	
		100 1-2	100 7-8		
PRICE OF GOLD.					
FLOUR—Super to Extra State	\$4 10	@ 4 60	\$3 35	@ 4 75	
Super to Extra Southern	4 10	@ 4 75	3 50	@ 4 75	
Extra Western	4 60	@ 8 50	4 15	@ 8 00	
Extra Genesee	4 75	@ 6 00	4 50	@ 6 25	
Superfine Western	4 10	@ 4 80	3 30	@ 4 15	
RYE FLOUR, Superfine	3 00	@ 3 75	3 00	@ 3 65	
CORN-MEAL	2 25	@ 3 10	2 10	@ 2 85	
WHEAT—All kinds of White	1 35	@ 1 43	1 20	@ 1 30	
All kinds of Red and Amber	1 00	@ 1 38	95	@ 1 18	
CORN—Yellow	50	@ 56	45	@ 54	
Mixed	48	@ 56	40	@ 46	
White	50	@ 57	45	@ 57	
OATS—Western	32	@ 40	27	@ 36 1/2	
State	33	@ 40	28 1/2	@ 36	
RYE	70	@ 75	63	@ 68	
BARLEY	46 1/2	@ 85	40	@ 80	
BARLEY MALT	65	@ 1 10	60	@ 1 10	
HAY—Bale, 100 lbs.	40	@ 45	35	@ 75	
STRAW, 100 lbs.	35	@ 65	35	@ 55	
COTTON—Middlelands	10 1/2	@ 10 1/2	11 1/2	@ 11 1/2	
HOPS—Crop of 1877, 100 lbs.	5	@ 10	5	@ 10	
Old, 100 lbs.	1	@ 3	1	@ 3	
FEATHERS—Live Geese, 100 lbs.	35	@ 47 1/2	35	@ 48	
SKID—Clover, West. & State	7 1/2	@ 7 1/2	7 1/2	@ 8	
Timothy, 100 bushels	1 25	@ 1 37 1/2	1 25	@ 1 40	
Flax, 100 bushels	1 40	@ 1 60	1 35	@ 1 45	
SPOAR—Red & Grocery 100 lbs.	6	@ 8 1/2	6	@ 8 1/2	
MOLASSES, Cuba, 100 lbs.	22	@ 36	25	@ 38	
New Orleans, 100 gal.	23	@ 50	23	@ 48	
COFFEE—Rio (Gold)	14 1/2	@ 17 1/2	13 1/2	@ 16 1/2	
TOBACCO, Kentucky, &c., 100 lbs.	2 1/2	@ 14	2 1/2	@ 14	
Seed, 100 lbs.	4	@ 50	4	@ 50	
Wool—Domestic Fleeces, 100 lbs.	23	@ 46	22	@ 45	
Domestic, pulled, 100 lbs.	18	@ 35	16	@ 33	
California, spring clip, 100 lbs.	12	@ 27	12	@ 27	
California fall clip, 100 lbs.	10	@ 19	10	@ 19	
TALLOW, 100 lbs.	7 1/2	@ 7 1/2	30	@ 7 1/2	
OIL—CARB, 100 lbs.	30 00	@ 31 00	30 00	@ 31 00	
Poltry—Fowls, 100 lbs.	9 30	@ 9 75	10 00	@ 10 35	
Extra Prime, 100 bushels	8 50	@ —	Nominal	@ —	
BEER—Extra mess.	12 00	@ 12 25	11 75	@ 12 00	
LARD, in tins, 100 lbs.	6 25	@ 7 17 1/2	6 00	@ 7 35	
BUTTER—State, 100 lbs.	10	@ 23	8	@ 19	
Western, poor to fancy, 100 lbs.	7	@ 23	6	@ 19	
CHEESE	4	@ 11 1/2	3	@ 8 1/2	
EGGS—Fresh, 10 dozen	10 1/2	@ 13 1/2	13 1/2	@ 15 1/2	
POULTRY—Fowls, 100 lbs.	9	@ 15	9	@ 14	
Chickens, 100 lbs.	20	@ 28	18	@ 27	
—pair	50	@ 125	—	@ —	
Turkeys—pair	10	@ 17	9	@ 13	
Geese, 100 lbs.	75	@ 150	1 00	@ 1 50	
Ducks, 100 lbs.	60	@ 1 12	50	@ 90	
Roosters, 100 lbs.	6	@ 8	5	@ 6	
Capons, 100 lbs.	25	@ 80	24	@ 80	
PIGEONS, wild, 10 doz.	—	@ —	40	@ 65	
SQUABS, per dozen	—	@ —	40	@ 1 75	
SLICE, per doz.	—	@ —	25	@ 3 00	
APPLES—100 barrels	2 75	@ 6 00	2 15	@ 5 75	
PEANUTS, domestic, 100 bush.	85	@ 1 40	90	@ 1 50	
STRAWBERRIES, 100 quart.	20	@ 30	5	@ 8 1/2	
CHERRIES, 100 lbs.	—	@ —	6	@ 12 1/2	
CRANBERRIES—100 bbl.	6 00	@ 9 00	—	@ —	
RADISHES, new, 100 bush.	50	@ 1 25	40	@ 75	
PEAS—Canada, in bond, 100 bush.	82	@ 83	76	@ 78	
—green, 100 bush.	1 05	@ 1 10	1 05	@ 1 75	
—new, 100 bbl.	4 00	@ 5 00	2 00	@ 2 75	
POTATOES, new, 100 bbl.	3 00	@ 7 00	1 25	@ 3 50	
POTATOES—old, 100 bbl.	1 00	@ 1 50	1	@ 1 75	
SWEET POTATOES—new, etc.	50	@ 1 25	—	@ —	
BEETS, 100 bunches.	—	@ —	2 00	@ 3 00	
TURNIPS, 100 bbl.	25	@ 62 1/2	1 00	@ 1 50	
—white, 100 bunches.	1 50	@ 2 00	2 00	@ 3 50	
BEANS—100 bushels.	1 50	@ 2 00	1 25	@ 2 50	
BROOM-CORN	4	@ 7 1/2	3 1/2	@ 5 1/2	
SPINACH, 100 bbl.	50	@ 75	37	@ 50	
TOMATOES, 100 box.	50	@ 80	50	@ 75	
CARLIFLOWER, 100 bbl.	—	@ —	1 00	@ 3 50	
CABBAGES—new, 100 bbl.	5 00	@ 10 00	75	@ 1 50	
ONIONS—100 bbl.	1 25	@ 3 50	—	@ —	
—100 crates.	—	@ —	50	@ 1 25	
RHEBARB, 100 bunches.	25	@ 2 00	1 25	@ 2 25	
ASPARAGUS, new, 100 doz. bns.	75	@ 1 50	1 00	@ 1 75	
LETTUCE, 100 bbl.	1 50	@ 2 50	50	@ 75	
SQUASH, 100 bbl.	1 25	@ 1 75	—	@ —	
STRING BEANS, 100 bbl.	1 50	@ 2 00	2 75	@ 3 50	
WATERCRESS, 100 bbl.	2 00	@ 3 00	—	@ —	
CUCUMBERS, 100 crate.	2 00	@ 4 75	30	@ 1 25	

Gold has been up to 101 1/2 and down to 100 1/2, closing June 13, at 100 1/2, as against 100 1/2 on May 13; 100 1/2 on April 17; 102 1/2 on January 12; 103 on December 12; 102 1/2 on November 12; 103 on October 12; 105 1/2 on July 12; 104 1/2 on June 12, of last year....Under very liberal offerings, favorable crop reports, and the pacific tenor of the European advices, prices of Breadstuffs have declined materially within the month, leading to extensive dealings, largely on export account (shippers buying Wheat, Corn, Oats, and Rye, quite freely), though closing weak....Provisions have been more active, but very unsettled as to values, closing for Hog products generally higher; Beef, weaker; and Butter and Cheese much lower. Eggs, which fell off considerably in price, closed more firmly....Cotton has been in more demand, and has advanced....Wool has been pressed for sale, resulting in increased depression, without stimulating purchases, which have been on a very moderate scale....Tobacco, Hops, Hay, and Straw, have been in quite moderate request at irregular figures....Ocean freights have been active, especially in the Grain and Provision interests, leaving off more firmly....Grain rates by steam to Liverpool closed June 13th at 8 1/2 (about 16 1/2 cts) per bushel; Glasgow, 9d.; London, 4d.; Bristol, 9d.; Hull, 9d.; the Continent, 8 1/2 @ 9 1/2; by sail to Liverpool, 7 @ 7 1/2; London, 7 @ 7 1/2; 1/2 bush. Flour to Liverpool, by steam, 2s. 6d. (about 60 cents 1/2 bbl.); by sail at 2s. 3d.; London, 2s. 3d., and by steam, 2s. 6d.; Bristol, by steam, 2s. 9d. @ 3s., and sail, 2s. 4 1/2 @ 2s. 6d. per bbl. Provisions by steam to Liverpool, 30s. @ 40s. per ton. Cotton by sail 1 1/2, and steam 1 1/2. Grain, by sail, for Cork and orders, at 6s. per quarter (8 bushels), and to Continental ports, 5s. 6d. @ 6s. 10 1/2; and from Phila. for Cork and orders, 6s. @ 6s. 3d., and from Balt. for Cork and orders, 6s. @ 6s. 3d. The following condensed, comprehensive tables, care-

fully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending June 13th, 1878, and for the corresponding period last year:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.
26 d's this mth 1,411,000	4,812,000	3,617,000	616,000	307,000	811,000	—	—	—	—
26 d's last mth 1,323,000	3,417,000	2,109,000	396,000	405,000	584,000	—	—	—	—
SALES.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.
26 d's this mth 1,411,000	5,409,000	4,815,000	741,000	229,000	1,973,000	—	—	—	—
26 d's last mth 1,407,000	4,576,000	2,531,000	423,000	371,000	853,000	—	—	—	—
2. Comparison with same period at this time last year.									
RECEIPTS.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.
26 days 1878.	341,000	4,812,000	3,617,000	616,000	307,000	811,000	—	—	—
26 days 1877.	231,000	496,000	1,916,000	113,000	89,000	814,000	—	—	—
SALES.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.
26 days 1878.	413,000	5,409,000	4,815,000	741,000	229,000	1,973,000	—	—	—
26 days 1877.	233,000	99,000	5,810,000	121,000	270,000	917,000	—	—	—
3. Exports from New York, Jan. 1, to June 11.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.
78. 1,091,000	20,151,000	10,104,000	2,101,000	1,384,000	732,000	255,000	—	—	—
77. 868,469	3,676,989	7,725,021	495,325	291,497	72,800	18,914	—	—	—
76. 868,469	10,838,067	6,134,527	250,934	8,000	98,921	376,791	—	—	—
75. 784,338	9,890,147	5,515,457	47,187	163	51,900	218,582	—	—	—
74. 937,783	15,035,516	7,021,960	413,103	10	57,785	386,916	—	—	—
73. 526,562	3,241,919	5,308,419	20,233	19,326	14,646	38,200	—	—	—
4. Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.	Malt.
June 10, 1878.	1,487,700	616,023	148,889	197,507	603,153	238,285	—	—	—
May 7, 1878.	1,487,700	263,020	73,229	27,576	570,298	258,327	—	—	—
Apr. 15, 1878.	1,370,081	541,648	106,735	396,861	837,213	253,424	—	—	—
Mar. 11, 1878.	1,339,371	420,181	112,200	60,145	1,090,897	275,705	—	—	—
Feb. 11, 1878.	1,417,035	783,410	206,838	821,653	1,415,633	318,079	—	—	—
Jan. 10, 1878.	2,586,715	1,055,909	289,333	918,808	1,081,585	321,474	—	—	—
Dec. 10, 1877.	2,811,982	1,723,239	399,077	864,787	1,579,032	338,419	—	—	—
Nov. 5, 1877.	981,374	2,643,502	166,919	368,429	1,770,759	328,388	—	—	—
May 7, 1877.	761,586	468,809	193,016	174,375	917,811	291,654	—	—	—
Feb. 7, 1877.	3,083,819	3,022,261	814,142	611,114	956,111	388,605	—	—	—
Jan. 8, 1877.	3,068,010	2,077,404	341,750	905,615	1,088,101	425,406	—	—	—
Dec. 11, 1876.	3,110,283	3,385,574	218,811	873,310	1,182,332	512,041	—	—	—
Apr. 10, 1876.	3,933,074	232,110	68,490	300,381	1,062,582	456,942	—	—	—
Jan. 10, 1876.	5,802,393	663,982	100,711	325,191	1,040,300	307,432	—	—	—
5. Tide-water Receipts at Albany, from opening of navigation to June 1st.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Swine.	Sheep.
78.	1,000	5,271,300	3,940,400	425,800	221,500	813,300	72,200	—	—
77.	100	3,838,800	1,281,300	104,200	76,000	211,100	68,300	—	—
76.	6,900	2,499,300	606,000	182,500	81,300	777,400	129,600	—	—

New York Live-Stock Markets.

RECEIPTS.					
WEEK ENDING	Bees.	Cows.	Culves.	Sheep.	Swine.
May 20.....	12,475	34	5,862	37,012	35,924
May 27.....	10,283	49	4,502	25,746	37,017
June 3.....	10,813	46	5,002	21,319	32,195
June 10.....	12,125	37	4,017	30,891	30,282
Total for 4 Weeks.....	46,195	166	19,443	115,071	133,448
do. for <i>prec.</i> 4 Weeks.....	41,754	205	16,729	86,282	121,309
Bees. Cows. Culves. Sheep. Swine.					
Average per Week.....	11,548	41	4,853	28,768	33,862
do. do. <i>last</i> Month.....	10,438	51	4,182	21,570	30,442
do. do. <i>prec's</i> Month.....	10,055	78	1,765	19,590	29,745

Bees.—The market for the past month has been very irregular, and trade has been dull. The weather has been very unpropitious. At the beginning of the month, the demand was light, and the receipts heavy, causing several hundred head to go over unsold from day to day, and a fall of a full $\frac{1}{2}$ c. $\frac{3}{4}$ lb. in one week, after considerable fluctuation. As the month passed, business became no better, and it closed at the lowest rates, with few buyers for poor stock, and no eager ones for good, and a generally lifeless feeling all round. The most active purchasers were the foreign shippers, who took all the best stock and a large portion of the second best. 29 car-loads of cattle were sold for shipment alive. The best grades sold for 10 c. $\frac{3}{4}$ lb. to dress 55 lbs. $\frac{3}{4}$ cwt., and 11 c. $\frac{3}{4}$ 57 lbs. The bulk of the stock offered, sold at 9 @ 9 $\frac{1}{2}$ c. $\frac{3}{4}$ lb. for fair natives; poor stock sold slowly at 8 @ 8 $\frac{1}{2}$ c. $\frac{3}{4}$ lb.

reports of live stock. After a brisk business, we note a falling off in demand and inquiry for all grades. Roadsters and trotters are getting to be out of the regular market, being animals of luxury, rather than of necessity in the present times. Foreign shipments for the week ending June 10th, amounted to 154 head, chiefly car-horses, for the London "tram-road" (car-routes). A number of good carriage-horses were shipped to England. Arrangements are being made to receive an importation of a number of pure bred French horses for Western breeders, which are looked for daily. Prices may be quoted as follows; light draft horses, poor, \$60 @ \$100 per head; coarse, heavy horses, \$90 @ \$175; fair trotting roadsters, \$200 @ \$300 per head; stylish carriage-horses are unsalable just now, and no quotations can be given.

Prices of Feed.

Bran, per ton.....	\$18.00 @ \$20.00
Middlings, per ton.....	19.00 @ 21.00
Ground Feed, per ton.....	15.00 @ 21.00
Linseed-oil-cake, western, per ton.....	41.00 @ 47.00
Cotton-seed-cake, per ton.....	25.50 @ 40.00
Chandler's Scraps, per lb.....	3 @ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, per ton.....	\$55.50
do. do. Lobos, do. do.....	47.50
do. do. guaranteed, per ton, cargo H.....	56.00
do. do. rectified, per ton, 3.20 p. c. e.....	69.00
do. do. do. do. 3.40 p. c. e.....	51.00
Soluble Pacific Guano, per ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone.....	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs.....	26.14
do. do. do. Grain and Grass, per 1,000 lbs.....	25.00
do. Fruit and Vine Manure, do.....	17.50
do. Bone, strictly pure, meal.....	42.00
do. do. do. extra fine.....	40.00
do. do. do. fine.....	38.00
do. do. do. medium.....	36.00
do. do. do. dissolved.....	42.00
Stockbridge Corn Manure, per acre.....	20.00
do. Potato do do.....	10.00
do. Tobacco do do.....	50.00
do. Rye do do.....	10.00
do. Wheat do do.....	15.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Gypsum, Nova Scotia, ground, per ton.....	8.00
Nitrate of Potash (95 per cent), per lb.....	9 @ 9½c.
Sulphate of Potash (44 per cent) per lb.....	3¼ @ 4 c.
do. do. (potash 27½ per cent) per lb.....	1½ @ 2 c.
German Potash Salts (potash 12 to 15 p. c. p. ton.....	\$15.00 @ 18.00
Muriate of Potash (potash 50 per cent), per lb.....	2 @ 2¼c.
Nitrate of Soda, per lb.....	4 c. @ 1¼c.
Sulphate of Ammonia (25 per cent), per lb.....	4½c. @ 5 c.
Dried Blood (ammonia 14 per cent) per ton.....	\$45.00 @ 50.00



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations can seldom be repeated, when those who desire information on a particular subject can so cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the American Agriculturist, containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.60 per volume.

Veterinary Education has a strong friend and worker in the American Veterinary College, New York. Its fourth annual report shows the Institution to be in a healthy condition. The live stock interests suffer enormous losses from lack of properly educated veterinarians, one of whom should be located in every county of America. There ought to be a score of such institutions as this, with a hundred students each, where now there is one. The American Veterinary College now stands on a footing comparing favorably with European institutions, and we wish it all success. A free scholarship is offered to each State Agricultural Society. For particulars address A. Liantard, 141 W. 54th St., N. Y.

The U. S. Entomological Commission.—When the last Congress authorized a Commission to investigate the ravages of the Western Locust, it was ridiculed by many papers, but the appointment of such men as C. V. Riley, of Mo., Cyrus Thomas, of Ill., and A. S. Packard, Jr., of Mass., indicated that the Commission meant business, and if any good could result from an investigation, the right men were set at it. Occasional Bulletins have been issued, giving to the public such facts as it was important to make known at once, and now the final Report of the Commission is in press. This, from the synopsis of its contents, which we have received, promises to fully justify the appointment of the Commission; and its value to the locust-ravaged States, and indirectly to the whole country, will far outweigh its cost. As the Government printing office sends out so many publications that no one wants, we trust that, now a really useful work is in hand, a liberal supply may be printed and distributed. When the Report itself comes

to hand we may have more to say about it; suffice it at present to state, that the labors of the Commission show that the Locust is not an evil against which we are powerless. In this, as in other cases, a full knowledge of our enemy, its mode of life, and, so to speak, its strategy in warfare, suggest the tactics to be employed in combating it. The mere knowledge of the fact that but little is to be feared from the locusts after their first year in a new locality, there being abundant natural causes to prevent their increase, is worth all the Commission has cost. The principal means for their destruction to be employed by farmers, aside from the encouragement of natural agencies, are: the destruction of the eggs, which may be done by harrowing, plowing, and especially by irrigating; the driving (which is quite practicable) and bruising, or crushing, or otherwise destroying young and wingless insects. Whatever destructive methods are employed must be directed towards the insect, either in the eggs or its larvæ or wingless condition, for when full-fledged but little can be done towards their destruction, though it is possible, to some extent, to drive them away from a particular field or locality. These matters, and many others, are discussed in detail in the Report, which is amply illustrated by engravings. The Report, so complete and exhaustive, is a credit both to the Commission and to the Government which authorized it.

"The Native Flowers and Ferns of the United States," by Thomas Meacham.

Boston: L. Prang & Co.—The house of Prang & Co., so widely and favorably known for the excellence of their chromo-lithographs, has undertaken to publish a work with the above title. As a rule, we do not notice works "published by subscription only," and not put in the general book trade, and only depart from our custom in the present case in view of the enterprise shown in the undertaking, and to express our wishes for its success. The work starts with a first series of 24 parts, each part to contain four chromo-lithographs, with descriptive text, and all to form two volumes. Should this first series meet with success, we understand that it is intended to continue it with others. No systematic arrangement is followed, each part already issued containing flowering-plants of different families, and ferns. A work which will give portraits of our native plants has long been needed, and though several attempts have been made in this direction during the last half century, they have all, from one cause or another, come to a premature end. The present work has elements of popularity: its engravings, being colored, are showy and attractive, and the text gives only a brief scientific description of the plant, but is mainly devoted to such popular talk as the subject suggests. The first two numbers, as might be expected in a new enterprise, show to the critical botanist defects which will be avoided in future issues, and, on the whole, offer promise of not only an ornamental, but useful series of portraits of our native plants.

The New York Horticultural Society held its regular monthly meeting, at their rooms, on Tuesday, June 4th. The semi-annual exhibition being so near at hand, but little was shown except a few very fine strawberries and roses. Any disappointment on this account, was offset by the lecture on the "Summer Management of Large Fruits," by Mr. P. T. Quinn, of Newark, N. J. The lecture, given without notes, occupied half an hour, and was replete with valuable information, clearly and tersely given. Among the points forcibly illustrated by Mr. Quinn, was the necessity for thinning fruit, the need of cultivating the orchard, and the folly of planting dwarf trees (in which, by the way, be encountered strong opposition); he denounced dwarfs without qualification, urging that standards only should be planted in the orchard. The tree peddlers, the men with the wonderful pictures, he classed as the most unmitigated humbugs—asserting that they had done more to discourage fruit-planting, than all other causes combined, as they not only supplied miserable trees when they did send them at all, but they were utterly indifferent to the correctness as to variety of those sent.

Is it the Feed, or the Breed?—"H. C. B., Lake County, Ind. It is not the feed that makes the difference in cows as to dairy qualities; although feed, of course, is needed alike by all. But what would make one cow fat, goes in another to make milk, and in a third to cream and butter. The same food that would make a good dairy cow yield 20 quarts of milk, and more than a pound of butter per day, would make a Shorthorn or Hereford fat for the butcher; and some cows will require much more food than others, to produce the same results. There are breeds, as the Dutch, and the Ayrshire, that have been for scores of years bred for the milk or cheese dairy, while the Jersey has been bred for a butter cow. Some native cows may be as good as any pure-bred, but out of 100 natives there may not be one such cow; while in 100 pure-bred cows there will probably be more than half of them equal or superior to the best na-

tive. A long course of breeding for a special purpose cannot fail to be more effective than haphazard breeding.

If H. M. B., of Waterbury, Ct., had looked on page 233 of the June number, he would have seen the reply to his question about "soot." Please look the pages through when desiring information, and you may save both yourself and the Editors much time.

Estimating the Weight of Animals, etc.—"C. & C. A., Del Norte, Col.

There are no certain rules for estimating the weight of animals or hay; these depend wholly upon the character of the things estimated, and which can only be judged of by an expert. A Texan steer could not be measured by the same rules as a Shorthorn or a first-class grade; nor could an ordinary hog be judged by the standard of a Poland-China or a Berkshire. So with hay; the rules are as various as the kinds of hay, its condition and the amount of pressure to which it has been subjected. The rules for hay in general use are as follows, for a ton:

Timothy a year in mow or stack..... 500 cubic feet.

Timothy from the bottom of stack..... 400 " "

Timothy newly stacked..... 700 " "

Clover stacked for some months..... 700 " "

Clover, new..... 900 " "

Timothy and clover, old stacked..... 600 " "

Timothy and clover, new..... 800 " "

Common meadow-hay, old..... 800 " "

Common meadow-hay, new..... 1,000 " "

These are approximations only, and would, at the best, only mislead a person who was not acquainted with the quality and proper condition of the hay. For cattle, the rules are just as arbitrary and uncertain, or more so, as the fineness of bone, "feel" of hide, amount of offal, age, and condition, are all items of consideration.

The Time for Cutting Wheat.—It is a fact first observed and made known by an English farmer and agricultural writer, Mr. John Hannam—recently deceased—and widely confirmed by many experiments during several years past, that the later stages of the ripening process diminish the proportion of flour and nutritive value of the wheat. The time to secure the best grain is when the kernel is still soft enough to be crushed, but is comparatively free from moisture, and breaks into meal between the thumb-nails.

Bean Weevils.—"N. L., Bellevue, S. C.

The history of this insect is, in brief, this: The weevil deposits its eggs in or on the beans when they are very young, and on the vine. The "worms," or maggots, feed on the bean, and when full-grown go into the dormant pupa state; they change to perfect beetles—for such the weevils are—about plating time. They appear to be more troublesome in the Southern than in the Northern States, but are increasing everywhere. Mr. White, in his excellent "Gardening for the South," advises to store seed beans in glass or earthen jars, closely corked, into each of which is poured a teaspoonful of spirits of turpentine. This, of course, affords no help for beans intended for food, as by the time the beans are ripe the weevil is usually full-grown and in the pupa state. If a whole neighborhood would burn their "buggy" beans, and procure a fresh stock of seed quite free from insects, they would be likely to escape the pest for a while, but so long as the insect is planted, so long may a crop be expected—and this kind of crop rarely falls.

Soil Analysis.—"H. L. B., London, Canada.

There is no "simple method of determining the proportionate constituents of soils." Chemical analysis can only be learned by long study and careful training; and only practised with accuracy by one constantly at work in the laboratory. To become a skilled chemist, one must have a thorough education at some good agricultural college, or scientific school.

Making Manure.—"A. A. R."

When manure is "fire-fanged," or overheated, the most valuable portion—the nitrogen—is driven off, although the mineral elements remain. To prevent overheating, it is not required to continually fork over the manure, but simply to compact the surface of the heap, and to cover it with a thin layer of earthen. Unleached ashes may be mixed with bone-meal, if care is taken to cover the mixture with plaster, or earth; and the action of the ashes will act upon the bones to reduce them to plant-food; but unless the earth or plaster is used, there will be a great waste of nitrogen from the bones.

Poisoning of Sheep by Wild Parsnip.—"E. A., Gervais, Oregon,

writes that he lost several sheep from poisoning by eating wild parsnips which grew in the pasture. The symptoms were dullness, ears drooping, eyes dull, often lying down, staggering gait, and avoiding the rest of the flock; death ensuing the second day. Others were saved by giving them a tablespoonful of saleratus dissolved in half a pint of warm water.—In nearly all cases of sheep poisoning,

either by parsnip (cow-bane), laurel, or other injurious herbs—in which the symptoms are generally as above noted—the immediate use of half a pint of sweet or linseed-oil will generally bring about a cure.

Harvesting Stock-Peas.—"J. H. C., Jr.," West Point, Arkansas. There is no difficulty in thrashing stock-peas. As harvested, they may be thrown on to a barn floor or a cleanly swept yard, and trampled out by horses; or they may be thrashed with the flail.

Large Yield of Butter.—"D. W. M. J.," Delaware Co., N. Y. 200 pounds of butter per year is a very fair yield for an ordinary cow. Many dairies do better than that by keeping selected animals and feeding high. A dairy in Illinois produces an average of 300 lbs. per cow, yearly, but each cow consumes 12 quarts of corn meal daily. It is not always that the high yields reported are profitable, but if we can turn 100 bushels of corn, costing about \$35 in Illinois, into 300 lbs. of butter, worth \$75 or more, there is profit in that. When much corn-meal is consumed, there is less hay eaten; the dairyman endeavors to induce his cows to eat all the feed that can be turned into butter. Grade Jersey cows are the best butter dairy cows, especially for quality.

Leprosy in Poultry.—"J. F. S.," The symptoms of this disease are as you describe them; a dry scale appears on the legs and spreads over the body; the fowls die in a short time, exhibiting dullness and mopeishness during the sickness. We know of no remedy. It may be prevented by careful feeding and giving the fowls, at frequent intervals, some such alternative and tonic as "Imperial Egg Food." Fowls require not only grain, but some animal food, plenty of green vegetables, sulphur, lime, and abundance of gravel or coarse sand; and last, but not least, plenty of pure water. Cleanliness is also absolutely necessary to health.

Bony Tumor on a Horse's Leg.—"C.," Lake Crystal, Minn. When the periosteum or covering membrane of the bone is bruised or injured, and inflammation is set up, there is an increased circulation in the part, which often develops a deposit of bony matter. This causes an enlargement of the bone, which is incurable. The only remedy is to prevent the deposit by drawing off the products of inflammation to the surface by stimulating applications which produce suppuration. As soon as bone is formed, nothing can be done, but to leave the blemish, as lameness rarely results unless the seat of the injury be the interior of a joint.

Farming in California.—"J. W. W.," Henry Clay, Del. The methods of farming in California are different from those usual in the East. The climate and other circumstances of that State make it necessary to adopt special ways of doing things which are described in no book upon agriculture. Of course the principles of the art are the same there as everywhere, but there are few people able to carry into practice any special method of farming, from a knowledge only of principles. To farm in California, or any other peculiar location, one must see for himself how it is done.

A Malformed Udder.—"C. W. C.," Blue Earth Co., Minn. Unless the malformation of the udder interferes with the milking, we would leave it as it is. A communication might easily be made between the forward teats and the quarters of the udder to which they belong, by means of a probe, and inserting a long tube to keep it free until the walls of the new opening were healed; but as the milk is all drawn off by the blind teat, there is no need for the operation.

Tobacco Stems.—"C. F. W.," Louisville, Ky. The ash is almost one-fourth potash. They also contain a large percentage of nitrogen, and are valuable as a fertilizer. The best way to use them is in the manure heap, where they quickly decompose. They are also cut into bits six inches or so long, and placed in the hill, where they are speedily converted into plant-food.

Oil Stoves for Summer Use.—When living temporarily in the city many years ago, we found it very convenient to have a gas-stove. In hot days it often happens that fire is only needed to "boil the tea-kettle," and perhaps a single hot dish of vegetables, both of which can be easily accomplished with the gas-stove, and the fire in the range allowed to go out—to the saving of coal and the comfort of the household. Whether the gas-stove is economical or not, no one having to do with gas-bills can ever find out. When we moved to the country, beyond the reach of gas-pipes, we attempted to find the same convenience in oil-stoves that we formerly had in gas-stoves, but soon gave them up. The oil-stoves of that day were crude affairs; they would smoke and give off disagreeable odors, unless constantly watched, and allowed but one article to be cooked at a time. Finding

them unsatisfactory, oil-stoves were abandoned as more "plague than profit." But fifteen years bring changes in oil-stoves, as in other matters, and this summer a new trial was made. Noticing the advertisement of the "Hot Blast Oil Stove," in our columns, one was procured and put into service. For an oil-stove there are two essentials—safety is the first to be regarded—next, efficiency, or a sufficient supply of heat. So far as safety is concerned, we can only judge on general principles, and from the structure of this stove we do not see how with safe oil—and only such should be used for any purpose—an accident can occur. During the short time it has been in use, the stove in its simplest form has been found to both boil and bake in a satisfactory manner, and it promises to be a useful substitute for the range in disposing of a large share of summer cooking.

Basket Items continued on page 273.

Sundry Humbugs.



We sometimes wonder if it is possible to state a matter so positively and emphatically as to preclude all further questioning. If we have endeavored to do this with any one thing, it has been the Wall Street business; if there is any virtue in "line upon line," it should be manifest here; for we have said our say over and again, month after month. Notwithstanding all that has been said, letters continue to come, inclosing circulars, and making inquiries, some asking if we include the sender of that particular circular in our general caution. For obvious reasons we cannot particularize in this matter. We have taken considerable pains to look into this Wall Street matter, and have invariably found that the senders of these circulars were not known to the regular business men of the Street, and were in no case members of the Stock Board. We advise our friends, and this advice is that of men who have passed their business lives in Wall Street,

TO LET ALL SUCH SCHEMES ALONE.

Inquirers seem to be equally persistent concerning a Secret Service concern in Cincinnati. It seems rather strange that any one could seriously consider such a scheme at all. Do those who propose to enter the employ of such a concern—provided it were all that it pretends to be—reflect that they are placing themselves in the position of paid spies? In most communities, if a man were known to be a "detective," he would be so thoroughly despised and shunned by his neighbors that the small salary he might (?) receive would be a poor compensation for being an object of public detestation, and pointed to as a paid spy!

Inquiries concerning the

U. S. SECRET SERVICE COMPANY

came to the Police Department of Cincinnati in such numbers, that it was found necessary to have a printed reply. One before us, bears the signature of the Secretary of the Police Department, and says: "The U. S. Secret Service Company is regarded in Police circles as a *fraud*, and is one of several such that have been established here under the guise of legitimate business, and which, unfortunately, through defects in our laws, we cannot reach."—This will be a sufficient answer to the many inquiries about the U. S. S. S. Co., received from all over the country, even so far away as Oregon. Lately the inquiries come concerning the "American and European S. S. Co.," of the same city. Upon investigating this, we received word from one of the officials that the police authorities would print their opinion in the form of a circular, which would be sent us in a few days. It will be safe for anxious inquirers to wait awhile.... In April last we devoted a large space to setting forth the operations of

CLARK & CO., "ADJUSTERS OF CLAIMS."

It will be recollected that the dodge was to send to the person addressed a slip of paper containing his name, and inquiring if the signature was his; with this show of care in identifying the person, was the announcement that he was "entitled to a certificate of gold mining stock valued at \$500," etc. The full particulars of the operation will be found on p. 127 (April), with an account of what befell Clark & Co. These "adjusters" and *truth* have just one quality in common; both, though

"CRUSH'D TO EARTH, WILL RISE AGAIN," and the adjusters have "riz," and are dispensing that

"mining stock," in blocks of \$500, as impartially as ever. It probably occurred to Clark & Co. that every one might not want mining stock, even if it were that of the celebrated—not to say notorious—"Silver Mountain Co."

Being "adjusters," they could adjust one thing as well as another, so they add another branch to their business, and pass around jewelry, "assorted," mind you, in nice little \$240 lots. But does any one suppose that Clark & Co. would send jewelry to the wrong man? Not much, for are they not adjusters! And they add just a small slip with a name upon it to the letter, and say, so cautiously, "We find the jewelry to be lawfully yours, if this is your signature." As we gave the mining stock letter in full, we will place on record this other choice specimen of

THE EPISTOLOGRAPHY OF ADJUSTMENT.

DEAR SIR—A claim for \$240 worth of assorted Gold Jewelry has been placed in our hands for adjustment. From investigation, we find the Jewelry to be lawfully yours, if this is your signature on the enclosed slip of paper. Return the slip to us, so we can compare it with your signature, and if found to be the same, we will send you the Jewelry. The money you sent was invested on the general average plan with the Manufacturing Jewelers' Association, which resulted in securing for you the Jewelry referred to. Our charge for adjusting the matter is 5 per cent, which is \$12. Please send us that amount, or, if preferred, you can pay it at the Express Office, after you have examined the Jewelry.

Respy

CLARK & CO.

There may be people who will be caught in such a trap; but they will find very little sympathy, as, to get what is alleged to be worth \$240 for \$12, they become partners in a lie by assuming as true, the assertion that they had sent money, while they *know* it to be false. What a very crooked and dirty business it all is, isn't it, Clark & Co., for you, and also that for the great instigator and prime mover behind you. In the Article in April last, we stated, that Clark & Co., and their twin brothers, Keyes & Co., and Russell & Co.—what a co-operative concern it is—could receive

NO MORE MONEY THROUGH THE MAILS,

except at a risk; it was somewhat surprising to see them starting up afresh within a few weeks. Upon inquiry at the proper quarters, we learn that the exclusion still continues, and that the few simpletons, or knaves, who forward them money, must do it through the Express. At least one reader is disposed to heed our injunction.

"FARMERS, BE CAREFUL WHAT YOU SIGN."

A farmer in Bergen Co., N. J., asks advice about investing in an invention, which will, among other remarkable things, "enable any one to produce New Potatoes, ripe Fruits, Berries, etc., all through the winter months."—The probability or possibility of the process, we do not now discuss; the point is, shall the farmer sign the contract? We say most *decidedly not*, as it bids him to grow "not less than three acres of potatoes, according to the process of the invention, each year for seven years in succession," to sell the potatoes, and to pay over to the inventor one-fourth of the proceeds, without deducting for expenses. It is safe to say that no possible advantage to be gained by the use of any process or invention can warrant the making of any such contract. In the agreement, the invention is spoken of more than once as a "patent." If a "patent," why the solemn agreement as to secrecy? as one can always get a copy of any patent for 50 cents!.... The Editor of a flourishing paper in Illinois, sends us one of the many sheets or catalogues devoted to advertising what they call "Novelties," but which are mainly

TRASHY AND FLASHY ARTICLES,

many of which are worthless, and others worse than worthless, as they are absolutely pernicious. This Editor is startled at the abundance and wide dissemination of the "cursed advertisements," as he properly calls them, and the fact that mere children of both sexes, of unsuspecting parents are known to have concealed in their pockets the vile articles advertised. He brings these to our notice, and hopes we will "devote a little attention to the matter." "A little attention!" good friend; we have devoted much "attention" to it these many years, and could tell more about it in ten minutes than you are likely to learn in a year. We have considered it in all its bearings, and are thoroughly impressed with its importance; but the trouble is, that it does little good to denounce such things on general principles; to be effective, we must name the man who offers corrupting books, devices, and appliances, and this would be the very thing that these chaps would have us do. They would get advertised in the very quarters, in the virtuous families of the rural population, the very places which they can but occasionally reach by their ordinary methods. So long as professedly decent papers publish such advertisements as the "Toll-gate," without learning upon what kind of a road that Toll-gate stands (it leads directly *downwards*, and is very *miry*), and other such traps for the unwary, stuff of this kind will get sufficient publicity without aid from us.

THERE IS BUT ONE SAFEGUARD

against this evil, and that rests with the parents. How many parents so treat their children as to have their per

feet confidence? We put the question directly to our Illinois editorial friend: was your father your best friend, the one to whom of all others you would first tell of some success, and to whom you would first go for comfort in some boyish trouble, or for advice when in doubt? Probably not, but it matters little now—but it matters greatly with *your own* boys whether their relations to you are such that they can have no secret, or think it necessary to conceal anything from you. The evil complained of is one that affects the peace and purity of the home circle, and it is just there that the remedy is to be found. Isn't it so, brother L.?... We have been expecting it, and it has come at last! The opportunity was so good that we wonder it has not been seized before. Here it is:

"A TIMELY WARNING—EIGHT HUNDRED TONS OF DEADLY POISON!"

is the heading of the hand-bill. Of course, this means Paris Green. And the account of the horrible things that may happen, and a general statement—with no particulars—of what has happened, is enough to make one give up potatoes for the rest of his life. But what good will it do to stop eating potatoes, and cease using Paris Green at this late day?—Not a bit—the deed is done—the world is in a bad way!—If it be any comfort to know our fate, read!—"Poisoned Blood is to-day coursing through the veins of thousands of people who do not, as yet, know the fact—but the awful truth will burst upon them by-and-by."—Now, where are we; or, rather, where shall we be when that bursting bomb-shell hangs us to hally-hack?—It is rather hard on the thousands of people who do not know it. After "piling up the agony" until it becomes actual mental torture, we become anxious, and we begin to wonder if it wasn't the potato that brought all the evil into the world, instead of the historical apple (*a pomme de terre*, instead of a *pomme de l'air*, so to speak). Let any one read this hand-bill, and the world will look differently to him. The boasted triumphs of our civilization, our telegraphs and phonographs, our telephones and microphones, become as nothing. Why have we graphs and phones, why Paris Expositions and Commissioners of Agriculture, if, when that "awful truth will burst," we are all at once to go to the how-ows! But out of all this blackness of darkness is there not a single ray of hope; has not our dark cloud just a bit of silver lining (or green-back—we don't mind, legal tenders being worth 99 cts.)? This despondent view comes of reading the thing only half through.—A "ray." It gives us a whole sunburst of hope. We read:

"BUT IT MAY NOT BE TOO LATE."

See how gently he lets it on—as Pat fired the cannon "aisy," so as not to hurt Mike, who held the iron pot over the nozzle, that the hall might not be lost—"May not be too late to use a powerful blood remedy, such as,"

"SUCH AS P * * * * S PILLS."

Hear them:—"We appeal to every lover of his race to spread the information contained in this hand-bill, with all possible haste"—which *we* proceed to do—in our own way. It is perhaps not just the way our down East friends would like, but it is the best we can do. "Let every Minister of the Gospel take it for a text and preach from it. Why not?"—"Why not?"—Well, the only reason that occurs to us just at this moment, is, that Ministers of the Gospel are not, as a general thing, unmitigated donkeys, and while they may show a want of taste, they have texts in a work which has answered tolerably for over 1800 years, and they haven't got to preaching from hand-bills yet.

Useful Additions to Our Rural Literature.

It is with pleasure that we announce that the already comprehensive list of rural books, published by the Orange Judd Company, is about to receive important additions. Those in the greatest state of forwardness are here noticed:

Talks About Manures, by Joseph Harris, M. S., Moreton Farm, Rochester, N. Y., author of "Walks and Talks on the Farm," "Harris on the Pig," etc., is the title of a new work now in press, and shortly to be issued by the Orange Judd Company, 245 Broadway, New York. In the series of "Walks and Talks on the Farm," and later in "Talks About Farm Crops," Mr. Harris has become so well known to the readers of the *American Agriculturist* that he needs no introduction to them. In the above-named series, he adopted a colloquial style, which, while it is too diffuse for the close student, is popular with many readers.

The assertion "I have done so and so," will arrest the attention of many, where the abstract statement that "so and so has been done," will be passed unnoticed save by few. The writer, who speaks in the first person, at once places himself on friendly terms with his reader, who, feeling that the teachings are for his special benefit, gives them a careful attention that he would withhold from the same matter presented in the usual form. In "Walks

and Talks," the author succeeded in conveying and in popularizing scientific teachings, and in presenting to the ordinary reader the results of scientific researches in a pleasant manner. One marked and useful feature of "Walks and Talks," etc., is the introduction of "The Deacon," a plain, old-fashioned farmer, slow to adopt new ways, but of sufficient intelligence to accept new views and methods when convinced of their value. The Deacon, by propounding such questions, and presenting such objections to scientific teachings as would occur to the common-sense farmer, became at once popular with the reader, as he usually proposed just such views as would occur to the average farmer, and put the author on his defence. Besides the Deacon, the Doctor and the Squire gave variety to "Walks and Talks." In "Talks on Manures," the readers of the author's former writings will meet his old friends, the Deacon, the Doctor, and the Squire, to which are here added young Charley, who contributes his share of the Talking. These persons go over the whole ground, from considering the general and important question "What is Manure?" through the methods of making, keeping, and applying it, to the choice of particular manures for special crops. The author makes great use of the experiments on manures by Lawes and Gilbert, at Rothamsted, England. In this he is justified not only by the intrinsic value of the experiments themselves, but by the fact that he was himself at Rothamsted when a large share of these were made. Having a personal relation to this important series of agricultural experiments, his accounts of them possess an interest which the bare results, as presented in tables, do not convey, and while the tables are given, the author's comments on them increase their interest and value. We may add here, that the most important tables recording the Rothamsted experiments, are presented in full; these are not, to our knowledge, accessible in any other American work, and these alone will be to many worth the price of the whole book. It is not often that the results of scientific investigations are presented in a manner so thoroughly popular, there being nothing in the work that may not be understood by the intelligent farmer or by his boys. To the author's large circle of readers we have no need to say more about the work—to others, we can commend it as presenting the teachings of modern science as sustained and illustrated by the best modern practice. Ready shortly.

Winter Greeneries at Home, by Edwin A. Johnson, D. D., author of "Half Hour Studies of Life," "The Live Boy," etc. The title of this work is fortunate; had the author called it "Window Gardening," it would have met with a doubtful welcome. In all our horticultural literature, there are no works so thoroughly unsatisfactory as those on window gardening. They are beautiful works to look at, being illustrated with fine engravings of plants, which "might, could, or should," but somehow never "would" flourish in the window-garden, in fact made up by persons with no practical knowledge of the subject. These works recommend a large share of the ordinary greenhouse plants, for window culture, while all who have had experience know that but a few of such plants are suited to the purpose. The author of "Winter Greeneries" is a clergyman, who for several years has found recreation in beautifying his study with plants; his work resulted in so much enjoyment to himself and his friends that he has been induced to tell what he did, and how he did it, in a little work, with the above title. "Winter Greeneries" implies, what all with much experience will admit, that the first and main thing to be aimed at in window-gardening is an abundance of green. Green vines, green trailers, and erect plants, with foliage of various shades of green, are in themselves always pleasing, and are within the reach of every one who has a window, no matter how unfavorable the aspect, or how unsuited the room to plants in general. If this work did not go a step further than to show how to accomplish this, it would be most welcome, but the author, after many trials, has learned that it is possible to add some flowers to the green, and gives a list of the select few that, if his directions for their treatment be followed, may be depended upon for winter bloom. Some may be disappointed that so few flowers are commended, but this, to our mind, is the most valuable feature of the book. In window-gardening, it is not what we would like, but what will like us—or rather our surroundings, that must direct our selection, and in this the work is an eminently safe guide. The book is not a mere dry set of directions, but its teachings are presented in the pleasant form of letters to some young ladies, who, having witnessed the author's success, have asked his instruction, and this allows a genial personality to pervade the work, and makes it withal readable, as well as instructive. It must not be inferred from this that the teachings are the less concise and practical; having years ago gone over almost every step of the same ground, we can safely commend "Winter Greeneries" as the best guide to successful winter-gardening, as suited to American homes, with our peculiar domestic surroundings, that we have seen, and we feel sure that those who follow its teachings

will reach a satisfactory measure of success. The work, which is now in press, gives engravings of the author's study, and other illustrations.

The Paris Exposition.

The International Fair now being held in Paris is worthy of the versatile, enterprising, industrious, economical French people. The *American Agriculturist* is represented at the Exposition, by Mr. George Houghton, who may have something to tell us a little later. We give below a partial list of the leading American exhibitors:

Auburn Man'fact'g Co., Auburn, N. Y., Agricultural Tools.
Adriance, Platt & Co., New York, Mowers and Reapers.
Aultman, C. & Co., Canton, Ohio, Agricultural Machines.
American Watch Co., Waltham, Mass., Watches & Mov'ts.
American Fence Manufacturing Co., New York, Fence.
Allen, R. H. & Co., New York, Warehouse Trucks.
Bay State Rake Co., Wintchendon, Mass., Hay Rake.
Baker, Walter & Co., Boston, Mass., Chocolate.
Bickford & Huffman, Macedon; New York, Seed Drill.
Baker, H. J. & Bro., New York, Chemicals.
Browne & Sharpe M'f'g Co., Providence, R. I., Machine Tools.
Brooks, Ezra, Hartford, Ct., Automatic Pump.
Bailey Wringer Machine Co., New York, Wringers.
Blake Crusher Co., New Haven, Ct., Stone and Ore Crusher.
Cortland Wagon Man'fact'g Co., Cortland, N. Y., Wagons.
Chadborn & Caldwell, Newburg, N. Y., Ag'l Implements.
Case, J. I., Racine, Wis., Agricultural Tools.
Crozier, L. S., Williamsburg, Kan., Cocoons & Reeled Silk.
Coates, A. W. & Co., Alliance, Ohio, Grain Rake.
Deere & Co., Moline, Ill., Plows.
Douglas, W. & B., Middletown, Ct., Pumps.
Dederich, P. K. & Co., Albany, N. Y., Hay Press, Horse Power Bale Machines.
Eagle Mowing Mach. Co., Albany, N. Y., Mowers & Reapers.
Fairbanks, E. & T. & Co., New York, Scales.
Farmers' Friend M'f'g Co., Dayton, Ohio, Grain Drill.
Farquhar, A. B., York, Pa., Threshing Machines, Horse Plows, Rakes, etc.
Gale Man'fact'g Co., Albion, Mich., Plow and Hay Rake.
Gillott, Jos., & Sons, New York, Steel Pens.
Globe Horse-Shoe Nail Co., Boston, Horse-Shoe Nails.
Howe Scale Co., Rutland, Vt., Scales.
Hill's Archimedean Lawn Mower Co., Hartford, Ct., Lawn Mowers.
Ivers, F., Cambridge, Mass., Buggies.
Jobson Harvester Co., Brockport, N. Y., Mowers & Reapers.
Lovell, Juo. P. & Sons, Boston, Mass., Air Guns and Pistols.
McCormick, C. H. & L. I., Chicago, Ill., Mowers & Reapers.
Mason & Hamlin Organ Co., New York, Organs.
Massey, G. B., New York, Revolving Boot-heel.
Nason Manufacturing Co., New York, Universal Pump.
Nonotuck Silk Co., Florence, Mass., Spool Silk.
Osborne, D. M. M'f'g Co., Auburn, N. Y., Mowers & Reapers.
Randolph, Theo. F., New York, Ditching Machines.
Remington, E. & Sons, Ilion, N. Y., Fire Arms.
Snyder & Bro., New York, Steam Engine.
Stratton & Cullom, Meadville, Pa., Hay Loader.
Stanley Rule & Level Co., New Britain, Ct., Rules & Levels.
Speer, Alex. & Sons, Pittsburg, Pa., Plows and Cultivators.
Studebaker Bros., South Bend, Ind., Wagons.
Stoddard, J. W. & Co., Dayton, Ohio, Ag'l Implements.
Sharpe Rifle Co., Bridgeport, Ct., Fire Arms.
Taylor Man'fact'g Co., Westminster, Md., Portable Engines.
Trump Bros., Wilmington, Del., Scroll Saws.
Taylor, B. C., Dayton, Ohio, Hay Rake.
U. S. Wind Engine & Pump Co., Batavia, N. Y., Windmills.
W. A. Wood Mowing & Reaping Machine Co., Hoosick Falls, N. Y., Mower and Reaper.
Wheeler & Wilson M'f'g Co., New York, Sewing Machines.
Wardner, Mitchell & Co., Springfield, Ohio, Mowers & Reapers.
Withington & Cooley M'f'g Co., Jackson, Mich., Garden and Farming Tools.

Treatment of Working Oxen.

These patient, useful, animals are much abused, as a general thing. A smart pair of oxen, well-trained, and well-fed, can do as much plowing and other work on a farm, as any horses that I have ever owned. What I mean by "well-trained, and well-fed," is to give them the same care that you give horses. Instead of leaving them standing in the yoke beside the fence or barn, to eat their dinners, put them into the stable and make them comfortable. Feed lightly in early spring, and when they have come into full working condition, give a bushel of ground oats every day, to a pair weighing 2,800 to 3,200 lbs. I consider ground oats much better than the whole grain. Many farmers have an idea that any one can drive oxen, but as it is most important with them, as with all animals, that they should be treated with uniform kindness. I think the best man on the farm should do this. Never drive with a club or goad, but with a whip, and seldom use it. Oxen can be guided by the voice. I trained one pair that would stop instantly at the word "whoa," start at one cluck, and at a second decided cluck, move off into a trot. Be firm, but kind, and you will find them returning affection; showing it pleasantly if any is manifested for them. Oxen can be made to grow, while working daily. It is economy to

keep two pair for doing the work that one pair can accomplish, by being on the go from morning until night, that neither may be overworked. I make each pair of oxen, on my farm, gain from \$50 to \$100 a year. If cattle can not be well fed, they ought not to be kept. I have enjoyed and been interested in oxen from boyhood, and on my father's farm, broke and trained many a pair of steers. Always bear this in mind, that animals are very apt to catch the spirit and temper of their masters, therefore try to keep good-natured when directing and controlling them.

B. C., Bennington, Vt.

Drilling Grain.

For many years, the only method recognized by leading English farmers, as suitable for planting grain, has been the sowing of the seed in rows by means of a drill; and the system is now coming into prominent use by our own grain-growers. That corn in hills will produce more grain than if sown broadcast, as for fodder, seems a needless statement to make, so well is it known. Why does not the same principle hold with regard to wheat and other small grains? It does, and only needs trial, to be as generally accepted. The accounts of the yield obtained from wheat drilled and cultivated like corn, almost surpass belief—one cultivator in California reporting the product of an experimental plot at the rate of 175 bushels per acre. It is well known that the yield of wheat-fields where drilling is practised, with the proper fertilization and culture, is often double, and even many times that obtained in ordinary practice. The principal difficulty in the way

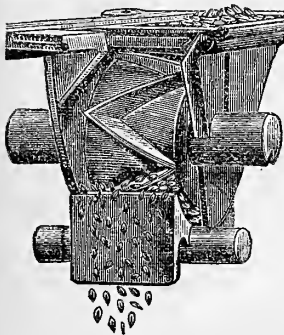


Fig. 1.—DISTRIBUTOR.

of drill-planting in the past has been the lack of suitable machines. Now, however, there are several excellent ones, among which is the "Farmer's Friend Grain-drill," made at Dayton, O. The working parts of this machine are shown at fig. 2. It is made to sow both fertilizer and seed at the same time; and not the least of it is the arrangement by which it becomes a hoe when desired. This matter of hoeing grain is of as much importance as the drilling, and is to be compared with the hill-planting and cultivation of Indian corn. Figure 1 indicates a section of the arrangement for feeding the seed into the drill. The diagonal ribs distribute the grain very evenly. This drill can be made to sow corn, peas, beans, turnips, and mangolds, as well as the small grains, and also to distribute any fine fertilizer.

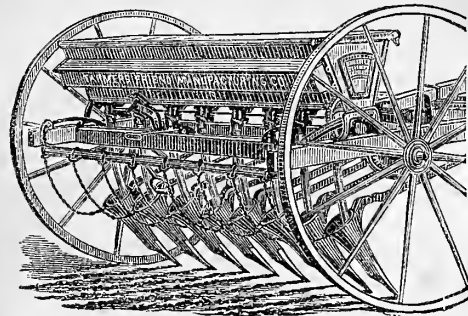


Fig. 2.—"FARMER'S FRIEND" GRAIN DRILL.

of drill-planting in the past has been the lack of suitable machines. Now, however, there are several excellent ones, among which is the "Farmer's Friend Grain-drill," made at Dayton, O. The working parts of this machine are shown at fig. 2. It is made to sow both fertilizer and seed at the same time; and not the least of it is the arrangement by which it becomes a hoe when desired. This matter of hoeing grain is of as much importance as the drilling, and is to be compared with the hill-planting and cultivation of Indian corn. Figure 1 indicates a section of the arrangement for feeding the seed into the drill. The diagonal ribs distribute the grain very evenly. This drill can be made to sow corn, peas, beans, turnips, and mangolds, as well as the small grains, and also to distribute any fine fertilizer.

Bee Notes for July.

BY L. C. ROOT, MOHAWK, N. Y.

In many locations the early part of the season has been very unfavorable to bee-keeping interests. The month of May, in Central New York, was cold and wet, preventing bees from securing the usual early honey from apple and other fruit blossoms. In most other parts of the State, bees have suffered severely. April was favorable, and many colonies were strong enough, and would have swarmed during fruit blossoms had the weather been propitious. At this writing (June 3d), colonies are not in so good condition as they were a month ago. I have found it necessary to feed my own bees regularly each evening to induce them to continue breeding, and in many cases to prevent starvation. In 1871 I was obliged to continue feeding until after the middle of July. I had 100 colonies, and many of them did not have a pound of honey until basswood commenced blossoming on the

20th of the month. I had fed so regularly that they were kept constantly breeding, and were very populous. Basswood, then, afforded an unusual flow of honey, and during the balance of the season I secured an average of 100 lbs. from each stock, while many who took little note of the early scarcity of honey failed to secure even a moderate yield. In most northern sections, the heaviest product will be secured during the present month. Boxes should be removed promptly as fast as filled and well sealed, and their places supplied with empty ones. If extracted honey is desired, an extra number of empty combs must be supplied, from which the honey may be thrown with the honey extractor as fast as filled. Box honey should be kept in a cool dry place. Extracted honey may stand in a warm room. Avoid the very common practice of allowing over-swarming. If movable combs are used, and swarms are allowed to issue naturally, open the hive after the first swarm issues, and clip off all queen cells *except one*, which will prevent after swarms. If *all* are removed, and a laying queen introduced, it will be found to be the preferable method.

QUESTIONS.—"What is Grape Sugar?"—"What is Glucose?"—"Is there anything objectionable or deleterious in their use, in connection with the production of honey?" ANS.—Glucose and grape sugar are the same thing, and are obtained from grapes, honey, starch, and other articles. As to the use of the ordinary grape sugar, which is used by brewers, and can be so cheaply obtained, for feeding bees, or any purpose, my experience has not been favorable. So far as the wants of the bees are concerned, I consider nothing better than pure honey. When feeding to stimulate breeding, if there is a scarcity of honey there is much danger of inducing robbing. For this reason, I prefer to feed a syrup, as heretofore directed, made of 4 lbs. of sugar to 1 quart of water. This answers every purpose in feeding the bees; besides it attracts pillagers very much less than honey.

WORKER AND DRONE COMBS.—"Will you give such information as will enable a novice to distinguish worker from drone combs?"—"I find that very many have trouble in readily distinguishing the different kinds of comb. It is a matter worthy of earnest attention, as in practical operations it is very essential. Figure 1 is an illustration made by the late M. Quinby, from a piece of comb, showing the different sizes of cells and the bees that are reared in them, which is very true to nature in the form of the cells and size of the bees. The small cells, on the right hand side of the engraving, are worker cells. It will be found by measuring, that there are five of these cells to the inch, or 25 to each square inch, on each side of the base. The eight small bees are the workers reared in these cells. On the left of the engraving are shown the drone cells, which occupy about 4½ to the inch, or about 20 to the square inch on each side of the base. The large bee at the bottom is a good

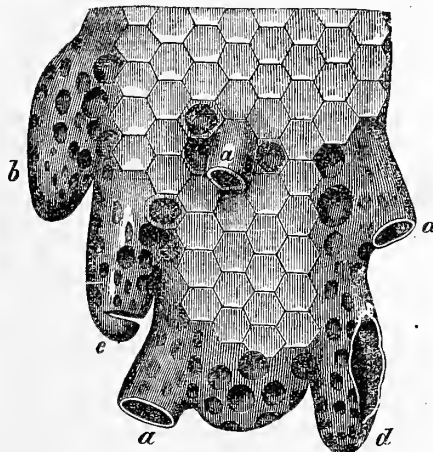


Fig. 2.—CLUSTER OF QUEEN CELLS.

representation of the drones hatched in these cells. Although not included in the question, it may be of interest to some, to state that the queen, shown in the center, is hatched in a cell of entirely different form and appearance, as shown in figure 2, which represents several queen cells (b, d, e) attached to a piece of worker comb.

About Medical Matters.

As it is hardly just to class these as "Humbugs," the frauds as well as the well-meaning, we treat them under a separate head. Some ten years ago we set down

ONE DOCT. R. H. BURNER,

from the reading of his stupidly ridiculous circular, as a chap to be avoided. It appears that said Burner has recently been at work in and around Hartford and New Haven, Conn. He was prosecuted awhile ago for some reason, but escaped through an imperfection in the indictment. But for all this, Burner does not escape pun-

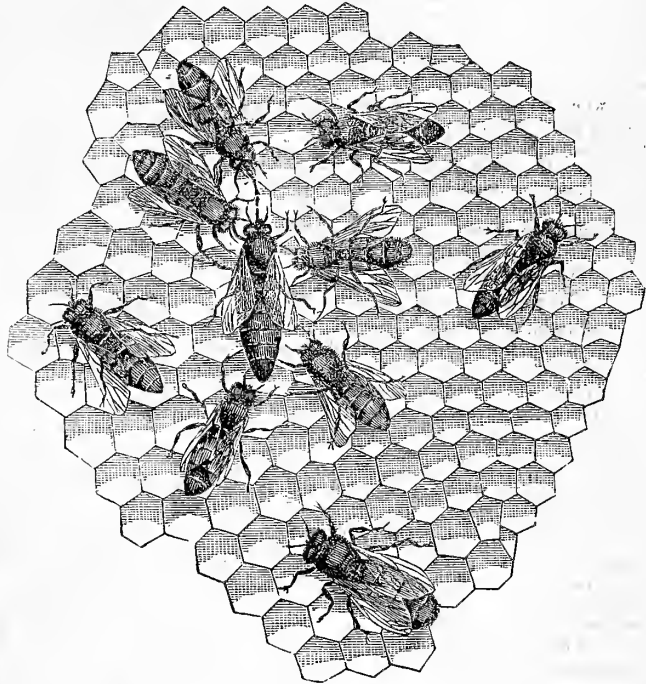


Fig. 1.—DIFFERENT SIZES OF CELLS.

ishment; the "Hartford Courant" and other papers are after Burner with such a series of regular scorches, that he will not find Connecticut a profitable field for future operations.... A subscriber in Vermont sends a circular of somebody's "Restorative Remedies," for our opinion. The circular has four closely-printed pages. We read on the very first line, after the heading: "Dear Sir—We enclose you Dr. —'s prescriptions;

"A CERTAIN CURE FOR"—

and we had no need to read any farther. Whoever promises "certain cures," takes a contract that *he can not fill*. Medical men know of but one "certain cure." So far as is known, sulphur has proved to be a "certain cure" for the *itch*—and that is not in the true sense of the word a disease—it is merely an eruption caused by the presence of a minute insect, to which, as to many other insects, sulphur is fatal.... Frequent inquiry is made of us as to the efficacy of

ELECTRIC BELTS AND CHAINS,

which are now being advertised as generally as they were 20 years ago. There are questions much more important than that concerning the electric appliances themselves, which each one who writes us, should settle first.—"What is the matter with you?"—"Who besides yourself, has determined upon the character of your disease?"—"Who has decided that electricity is the proper remedy in your case?"—"If electricity is prescribed by a competent physician, what one of the several forms in which it may be applied, has he advised?"—"If the 'Pulvermacher,' or any other chains, are thus prescribed, get them. If any other appliance, get that.' We will not do or say anything to induce any persons who are really ill

TO TREAT THEMSELVES,

nor can we encourage those who imagine themselves ill, to putter with electricity or any other remedial agent. The great trouble with all this medical business, is, that persons who do not know whether their liver is inside of the stomach, or outside, [indeed, we once knew of a quack doctor who certified that a woman had vomited up a part of her liver—which she could no more do, than throw up her great toe], who have not the slightest idea of their own anatomy—the action of the organs in health, and what may result from their disease—the great trouble is, we say, that such persons assume that so and so is the matter with them, and then write to us to ask if this or that is good for them. Frequently they write that they have spent \$5, or \$10, on some stuff "warranted to cure," and getting no relief, they wish us to expose the maker of the nostrum as a fraud. Such people are all beyond our

help. No matter what we say, they will go on doctoring themselves and trying one advertised thing after another. Every sensible physician knows that it is a comparatively easy matter to treat most kinds of disease, but that it often requires all his skill

TO FIND OUT WHAT IS THE MATTER, or to make a proper diagnosis. All these secret remedies do harm, as they excite the imagination of the weak and nervous. Their circulars enumerate just the symptoms and feelings that those who are "generally out of sorts" are sure to have. The reader finds that his "case is described exactly," and it follows, as a matter of course, that the stuff is taken. Lawyers have a maxim, that "one who pleads his own case has a fool for a client;" and this is equally applicable in medical matters. We have known several eminent physicians who would never prescribe for their own families, but whenever wife or children were seriously ill, would call in another physician—this for fear that their judgment as to what should be done, might be warped by their affections, and that they might be restrained from using prompt remedies through sympathy with the sufferer. If those who know the most, are thus cautious, what recklessness for those who know nothing about sickness and remedies to undertake to treat themselves! We would say in all seriousness to those who

ARE ILL, OR THINK THAT THEY ARE:

If your ailment is such as attention to diet and abundant exercise—with it, may be, some simple tonic, of which every family has its favorite kind, will not cure, don't—please don't, write for our opinion about this or that advertised medicine. Medicine is of the least importance—the thing you need to know is—what is the matter; that being ascertained, the question of medicine is easily settled. Instead of writing us, enclosing circulars of wonderful remedies, go to the nearest physician, who is a physician—not avoiding one who happens to be young—and find out what—if anything—is the matter.

THINGS TO BE REMEMBERED.

1st. That there is no sure cure for ANY disease.—2d. That you can not possibly judge for yourself, or from what appear to be your symptoms, just what is the matter with you.—3d. That ANY "Doctor" who attempts to prescribe for you from your own description of your symptoms, is surely an unreliable quack.—4th. That similar symptoms are exhibited or felt by you, so far as you can judge, for very different diseases, and those requiring very different treatment.—5th. That different conditions of the system, of temperament, etc., in different persons, require very different medicines or treatment for the same disease, and this applies to sight and hearing as well.—6th. That medical advertisements, and circulars, and pamphlets, are mainly successful, by detailing certain signs and symptoms in such a way that the reader, if at all nervous or credulous, is quite apt to apply the descriptions to himself, or herself, and thus hundreds of thousands of people are led into doing, and really making themselves sick, when they would have got well if they had let the medicines alone.—Hence, 7th. Never read any medical advertisements, or pamphlets, or circulars, whatever. You never find them advertised in this journal, though we could get tens of thousands of dollars every year if we would admit them.

Science Applied to Farming.—XLIII.

Natural Strength of Soils, and Economy in Making Use of It.

Every one who has traveled through that part of Connecticut will remember the barren plains just north of New Haven. Large portions of this soil, if such a dry, drifting sand may be called a soil, are entirely devoid of vegetation. It comes nearer my idea of a desert than any other territory I am familiar with in this part of the country. With the aid of Dr. J. W. Alsop, of this place, and Mr. W. Balentine, of the Experiment Station, the experiments referred to were made on portions of the poorest of this sand. Fifteen wooden boxes, each one foot square, were filled with the sand and arranged in three series of five each. The boxes of each series were numbered I., II., III., IV., V. In the

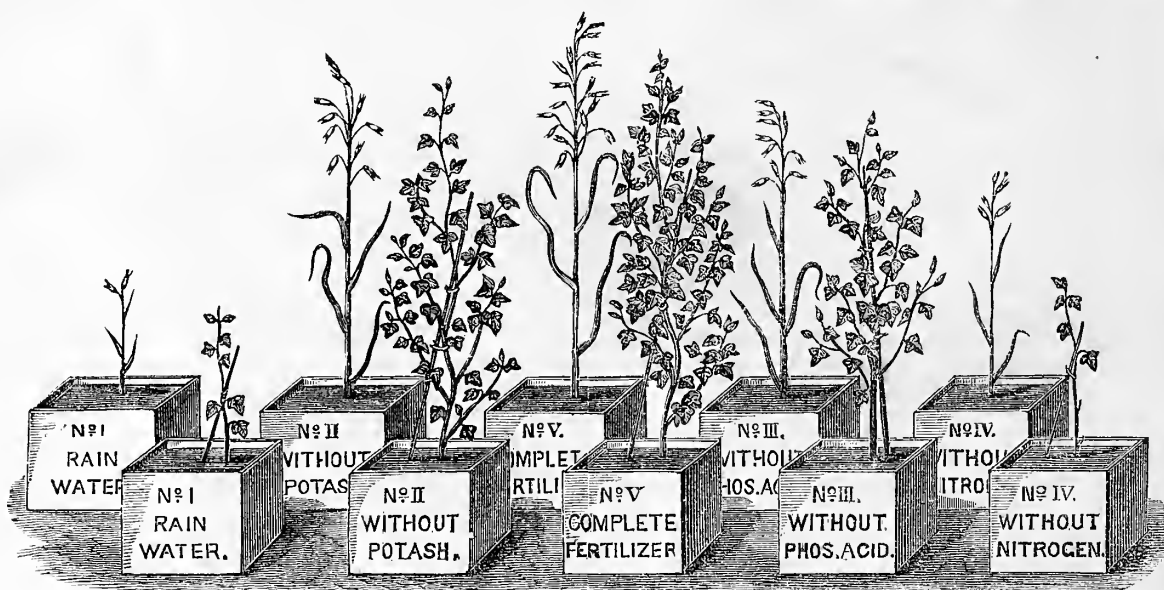
first row buckwheat was sown; in the second oats, and in the third beans. To fertilize these, several solutions were prepared by dissolving the proper chemical salts in water. One of these contained all the materials which plants require for their food from the soil. This "normal solution" was the same as is used in the experiments in "water culture," previously described, and was applied to No. V. of each series. Another solution, containing the same ingredients, except that nitrogen was omitted, was used to water the plants in No. IV. A solution, with everything but phosphoric acid, was applied to No. III. of each series. Potash was in like manner omitted from No. II. Finally each No. I. received only rain-water. The plants came up, and grew. Those supplied with the complete fertilizer, No. V., were healthy, did well, and gave a fair crop. Where potash was omitted, No. II., the plants were about as tall, but thinner, and the yield of seed was only about half as large. Without phosphoric acid, No. III., the plants looked about as well, but the amount of seed was extremely small. Where nitrogen was left out, everything else being supplied, the plants were stunted, spindling, and sickly. They yielded almost no seed, and were in fact no better than those which had nothing but rain-water.

When the plants were ripe they were harvested,

thing else was furnished, the growth was no better than with rain-water. This soil could supply considerable potash and some phosphoric acid, but its stock of available nitrogen was extremely low.

This is exactly what was to be expected. This sand is composed of particles of stone of different kinds, which contain more or less of the mineral ingredients of plant-food: lime, potash, phosphoric acid, etc., much more than most people suppose. But there is scarcely any vegetable matter to supply nitrogen, or to hold it if it were supplied. What this soil wants first of all is water. Next to that it needs vegetable mould to hold the water it gets, to supply nitrogen, and to help it gather nitrogen from the air. Given moisture and the vegetable matter that muck, green crops plowed in, and roots could furnish, and it might supply a portion of the mineral elements of plant-food for a considerable period.

The natural strength of a soil is what it has to fall back upon after being reduced by cropping. It is practically constant, and depends upon the chemical and physical processes, that with the aid of air and moisture, warmth and frost, and growing plants as well, are continually going on in every soil. These agencies are active whether the soil is cultivated or not. Proper tillage aids them wonderfully; but still, without it, the avail-



EXPERIMENT WITH BUCKWHEAT AND OATS GROWN IN BARREN SAND, AND SUPPLIED WITH DIFFERENT FERTILIZING INGREDIENTS.

the roots being freed from sand by careful washing, and the different parts measured and weighed. The picture represents buckwheat plants of average size, from each lot. The table below gives measurements and air-dry weights of buckwheat and oats:

Plants Grown in Barren Sand, Fertilized with Different Solutions.

	I.	II.	III.	IV.	V.
BUCKWHEAT.	Rain Water.	Without Potash.	Without Phosphoric Acid.	Without Nitrogen.	Normal Solution.
Number of Plants...	25	25	24	24	24
Average height, Centimeters.*	30	60	60	30	61
Weight of seed, Grams.†	1.2	13	4.4	0.9	20.4
Weight of straw, "	4.9	14.1	8.7	2.9	25.4
Weight of roots, "	4.6	6.6	2.4	4.6	5.4
OATS.					
Number of plants	25	25	24	27	27
Average height, Centimeters.*	20	55	50	39	61
Weight of seed, Grams.†	0.3	4.5	1.3	1.3	4.2
Weight of straw, "	1.8	14.9	11.4	5.5	34.5
Weight of roots, "	2.3	7.7	4.6	3.9	17.3

* $\frac{2}{5}$ Centimeters=about 1 inch. † 1 Gram= $\frac{1}{15}$ grains.

This sand evidently needed a complete fertilizer. The omission of each one of the more important ingredients of plant-food brought the yield down, but in very unequal proportions. In lack of potash, everything else being supplied, the crop suffered badly. Leaving out phosphoric acid injured it still more; while, without nitrogen, even though every-

ble stock of food accumulates so long as less is removed than is resupplied. It is in this way that fallow ground recuperates, and that virgin soils have acquired their richness. But what the soil will thus do slowly for itself, we may do for it much quicker by manuring. This strength is like a deposit in the bank, which we may draw upon slowly or rapidly as we will, but which will, sooner or later, be gone unless new deposits are made. Natural strength is like the interest on good bank stock. It comes gradually, uniformly; can not be drawn in advance; and if not drawn will be held in store for future use.

How Crops are Dependent upon the Food-Supply in the Soil.

The money we get from the bank, however, whether from checks on deposits, or dividends on stock, we can use to its full value without discount or restriction. But the crop can not make such unrestrained use of the plant-food in the soil. The crop has to do not merely with the supply of plant-food as a whole, but also with each of its ingredients separately. It is, I believe, a principle of military science that a fortification is no stronger than its weakest point. The crop can not rise above the level of the lowest element in the food-supply. If all come up to the required standard, and other conditions are favorable, a good yield is certain; but if any one falls below this standard, the crop must fall with it. Now this food-supply varies in different soils. It varies, not only as a whole, but in its different parts. Sometimes one

element, sometimes several may be lacking. A soil may have a proper texture, amount of moisture, and a full supply of everything the crop needs, except phosphoric acid, for example. Add phosphate in available forms, and the yield will be bountiful.

If I have made my meaning clear, it will be seen that the main point in economical manuring must be to economize what the soil can supply, and to add what it can not. The proper use of special fertilizers is to fill up these deficiencies, to bring the food supply into equilibrium. As Mr. Lawes says, "Soils were meant to be exhausted." That is, the material they furnish was meant to be used. The point is to utilize it most economically, and add what is needed to bring the most largely and permanently profitable results. W. O. ATWATER.

[It seems to us that the most valuable fact indicated by this experiment is, that by far the best results were obtained from the box where the complete fertilizer was applied: results which corroborate the experiments carried on for 8 years by Professor Stockbridge at Amherst. The results indicate that a portion only of the potash and phosphoric acid might be omitted from a fertilizer for such land; how much, and whether an addition of organic matter would help to render available the mineral ingredients of fertility in the soil, are questions worthy of further investigation.—ED.]

An American Agriculturist Experimental Farm.

Devoted to the Testing of New Theories, Methods of Practice, New Crops, Fertilizers, and Implements.—An Important Enterprise for the Benefit of Agriculture.

The Editors of the *American Agriculturist* have always been experienced farmers, gardeners, etc.; and their work and their farms have been largely experimental, for the good of their readers. "The Pines," especially, is a place well known to the public, as the source of much valuable information, derived from Dr. Thurber's trials of new ornamental and flowering plants, and small fruits, and his experience in cultivating the old as well as new varieties; which work will be continued with ever increasing benefit to our subscribers. Recently a gentleman connected with the business of the Orange Judd Company, out of his interest in the cause of good husbandry, has devoted a large farm in Orange County, N. Y., to experimental purposes, for the benefit of American Agriculture; the experimental work to be under the direction of one of the editors of the *American Agriculturist*.

This Experimental Farm is located in a charming valley, running north and south, between two low mountains—Skunnemunk and Lawyer's Hill—extending from the ridge of one to the summit of the other. The soil therefore varies from gravelly mountain-top and loamy hill-side, to alluvial meadows—thus offering an ample variety of conditions. There novelties in field crops and vegetables will be tested and their value reported; new theories as to methods of practice will be severely tried, and their virtues set forth or worthlessness exposed; systems of fertilization, manuring, or feeding crops will be thoroughly investigated, and results reported; various methods in the management and feeding of animals will be compared, and the results given our readers; new implements, which manufacturers may place in our hands for trial, will be carefully tried, and their merits—for the crops there cultivated, and on that kind of soil—will be judged, and impartially reported upon. In short, Our Experimental Farm is to be conducted as an experimental farm, in the interests of the great community of farmers and gardeners; and all of this experimental work will be carried on in connection with, and as farm practice. But let every reader of this remember that most farm experiments are the work of years, and that immediate results can be obtained only in a comparatively few cases. So do not expect too much of this enterprise, and we will try to give you all you expect.

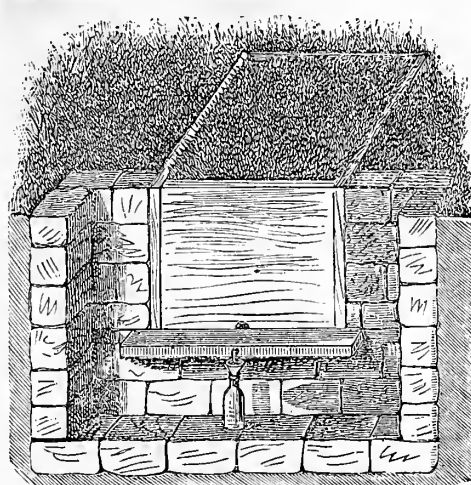
From the mountains on either hand, numerous springs water the hill-sides and meadows. So leaky, indeed, were the mountain reservoirs, that drainage has been necessary, and is now going on, over a large part of the tillable land; but there are also dry ridges, where the dryest of dry-soil crops can be raised. The farm is especially fitted for stock-raising, and rather poorly adapted to grain crops. Stock-farming, therefore, will be the general aim of the practice, with sheep as a speciality. Crops raised for particular industrial purposes, will also be prominent in our practice and experiments, as being of great importance to American Agriculture. This year, as the farm is under course of improvement from the state of neglect it was found in when recently purchased by the present owner, the experiments will be necessarily restricted within more narrow limits than we hope will be the case in the future. Those now under way are as follow:

Experiments Now Going On.

Amber Sugar Cane.—2½ acres on a dry, loamy plain of recently plowed sod, manured with well-rotted compost, and 250 lbs. of superphosphate per acre; 2½ acres on a fertile, moist, clayey loam, thoroughly drained, stubble-land, planted to potatoes last year; manured with 250 lbs. superphosphate, 200 lbs. high grade sulphate potash, and 160 lbs. nitrate soda, per acre. This is to test the value of this crop for the production of sugar, in the East, it having been reported as quite successful in some Western States.

Corn.—9 acres on a moist, drained meadow. In 5 plots, manured with green stable-dung, chemical fertilizers in different forms and combinations, and one plot unmanured. Other experiments are with various combinations of chemicals on potatoes and grass, to be reported in due season.

A *Lysimeter* has been put in position on a field of deep, loamy alluvial soil. A bottomless box, strongly made of two-inch plank, and about 45½ inches square inside, and averaging 36 inches deep, was forced into the soil until its top was even with the surface; then a frame of five-inch timber was



LYSIMETER IN POSITION.

let down outside the box, so that its upper side was two inches below the bottom of the box. A plank bottom, six inches each way larger than the box, was then forced beneath the box, upon the frame, by means of jack-screws and picking out the earth before it with a sharpened stick; the inside was lined with galvanized iron; and after the bottom was placed in position, the iron of the latter was soldered to the iron of the sides. The bottom inclines 1½ inches from back to front, and an opening is left at the lower side, from which the water which percolates through the enclosed earth is collected in bottles. Room is left in front of the apparatus, by stoning up a cavity dug in the earth, to attend to its working. A rain-gauge is at hand to measure the rain-fall. This is the third *Lysimeter* in operation in this country—the first being that of the Sturtevant Bros., South Framingham, Mass., set two years ago; the second is at the Massachusetts Experiment Station. The difference between the amount of water in the rain-gauge and that gathered at the *Lysimeter*, shows the proportion which percolates through the soil—the remainder being evap-

orated through the vegetation or from the surface of the ground. By analysis of the water running through, the wastes of fertility by drainage are determined; and thus we shall be able, also, to study changes taking place in the soil under different methods of fertilization and culture, as the area within the *Lysimeter* will be treated the same as the field outside. In short, the *Lysimeter* is an apparatus for studying the relations of soil, air, water, and fertilizers; comprising important questions.

Secretary of Agriculture.

The to-do being made over the attempt of the person who is supposed to occupy the position of Commissioner of Agriculture, to have his office elevated to a Cabinet position, is a striking illustration of the estimation in which this great industry is held. Some, in their desire to advance the calling, would grant Mr. Le Duc's utmost wish, evidently supposing that with a bigger name he could do better work. Others decry the whole plan as an attempt at class legislation, and hold up the past and present history of the Agricultural Department as an argument against the principle. That the industries of a nation, by which the bread and clothing, and all material wants of its people are supplied, and property is accumulated, should have some representation in the government, seems too self-evident for argument. Commerce, which represents but a limited number of people, and has only to do with the transportation and exchange of the products of agriculture and manufacture, has its interests carefully watched over by the government, which, for its benefit, has a Consul in every foreign port. Manufacturing, because of the individual and combined wealth of its supporters, commands respect and legislation for its interests.

The sending of mail matter is considered of enough importance to require a position at the head of the government. The protection of the property accumulated by the industries has two representatives in the Cabinet. While Agriculture, in which over half of all the people of the country are engaged, producing all that manufactures, trade, and commerce, have to deal with, and the foundation of all that the government is supposed to protect, is placed at the bottom as of utter insignificance. Verily, it seems as if the world were made up backwards, so true is it that the least is considered greatest and the greatest least.

The Department of Agriculture has power and scope enough, as it is, to do all that Agriculture can ask. It only needs a man at its head who knows the demands of the situation, who is an agriculturist in experience, education, and sympathy; a man of broad, liberal mind, and of executive ability, such as is usually selected for equally important positions in other departments. Such a man has never yet filled the office, but instead, it has been used as a sinecure for political favorites, and to pander to the demands of empty-headed politicians whose constituents are so impecunious as to be bought with a package of worthless seed, or a book of stale statements called a "Report," of little value, to say the least. A man who buys seed for distribution, of dealers who would otherwise dispose of them to planters who wanted them, or spends large sums for objects which any intelligent farmer would know better than to touch, and who does nothing more, except to seek personal glory, is to be pitied that he can not see his own inability; and the criticism and derision which he and his department receive should be visited upon those who permit this state of things—the farmers themselves, whose place it is to demand proper representation in this department. Given a man to fill the position of Commissioner of Agriculture, and we would guarantee the expenses of his department for a year if it was not at once recognized as a power for good. The position does not want more power; it only needs a man who can use that which is now given it. If a Secretaryship shall secure such respect for the industry, that a man of the proper caliber would be appointed to its head, then give us the Secretaryship—but not before.

A Summer Cottage, Costing \$150.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans are for an economical Cottage, for an occasional summer residence of a family of four

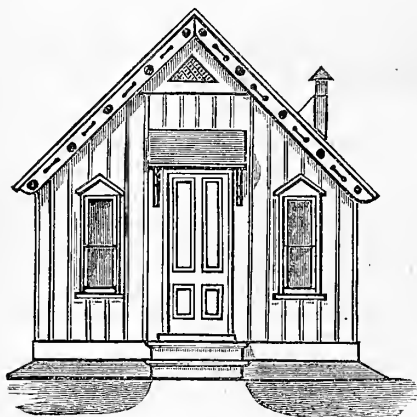


Fig. 1.—FRONT.

persons. It is suited to almost any place, either by the water, or on the mountain, where rest and recreation are sought. It costs scarcely more than a first-class family tent (which it is designed in a measure to supplant), and is far preferable, as it affords better protection and accommodation, and is more convenient and comfortable. It also admits of some of the home-like ways of living. Tents supply little comfort; their form necessitates a cramped, disagreeable position, with barren walls, and very small facilities for housekeeping. They sway and vibrate with every wind, and are intolerable in a storm. Out-door shade, so desirable in summer, is usually already provided by large trees. A single low tree, with extended branches, may shade several cottages, and serve as support for swings and hammocks for the young folks. In connection with the building, stationary fixtures for bedsteads, tables, etc., arranged to fold up when not in use, save largely in room and furniture expenses....**Exterior.** (figs. 1 and 2).—The upright boarding and battening of the sides, the figured gable barge, hooded projections, and steep roof, are appropriate in material and style. The building is set one foot above the ground, and the space below is inclosed by turfing around to the level of the sill. For better appearance, and to raise the floor further from the ground, an additional foot or two of elevation may be given,

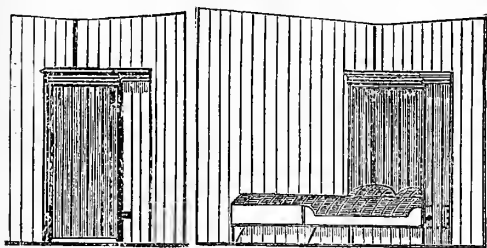


Fig. 4.—BED CLOSED.

BED OPEN.

with increased hanking or terrace....**Accommodation.** (fig. 6).—The interior has two rooms and two closets. The front portion intended for the family-room is of fair size, with two win-

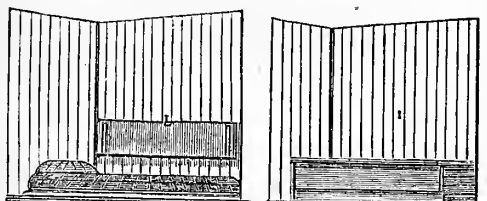


Fig. 5.—BUNK OPEN.

BUNK CLOSED.

dows in each of two sides, and three doors, as shown. A folding-bed is built in one corner, and

a large shelf between windows at A; sufficient room remains for a center-table, chairs, etc. The rear room, or kitchen, has two windows, an outside door, and a closet. A circular shelf and a stove are placed at the side of the closet. A hunk placed in the opposite end of the room, serves as a seat during the day, and for a bed at night. A table is hung against the partition....**Construction.**—The foundation may be of stone, or posts set in the ground. The floor timber is framed together—levelled on the foundation, and floored over, and the edges cut even with the sills. The upright frame of 1½ x 5-inch plank, and the plates 1½ x 6 inches, are then placed in position, with openings for doors and windows, as shown in figure 4. The exterior boarding, dressed on both sides, is then put on and battened. The roof is similarly boarded—with the center portion ceiled down, leaving an air space above. At the ends of this air space in each gable, are openings through the siding for the passage of the heated air from under the roof. Similar openings in the ceiling over the center of each room, lead into the air space. Each opening is neatly finished with lattice work. The roof projects 8 inches, and has a 3-inch marginal strip all around, with pierced barge in each gable, covered with pine shingles. The door openings are protected by shingled hoods resting on dressed trusses. The windows are neatly capped. Each window has battened shutters, with wrought-iron hinges and fastenings. The in-

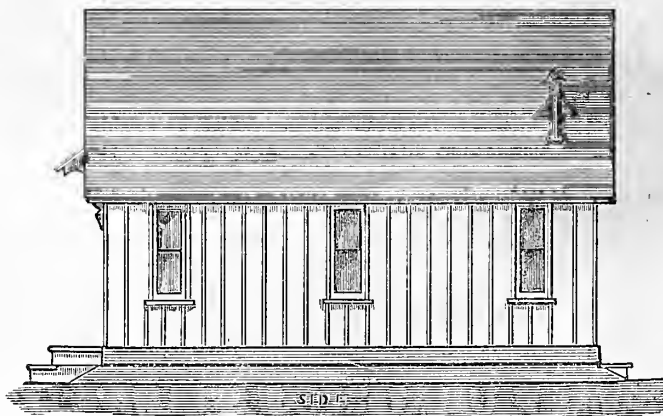


Fig. 2.—SIDE VIEW OF SUMMER COTTAGE.

side framework (see fig. 3) forms the jambs of the doors and sashes, to which they are hung with ordinary butts. The intervening spaces show as panels. The inside partition is 6½ feet high, and has an 8-inch cap projecting mostly to the kitchen side; this cap strengthens the partition, and forms a shelf. The outside and partition doors are panelled; the others are battened and clamped. The kitchen closet has four shelves, and the other, or front closet, has one shelf and two rows of hooks. The circular shelf at the side of the kitchen closet is set level with the bottom of the sash, and has a sheet of zinc attached to its inner edge extending to the floor, protecting the surrounding wood-work from the heat of the stove. The table is 2½ x 4 feet, is hung to the partition, and supported on swinging braces. The bed frame is constructed of ceiling boards, as shown (see fig. 4); when opened, answers the purpose of a bedstead, and when closed serves as a closet for the bedding. The hunk (see fig. 5) is also of ceiling boards clamped together. These devices are easily made by any carpenter, are inexpensive, and answer their purpose acceptably. The outside has two coats of paint, of any desired color, prepared and applied in the usual manner. The inside is stained with oil.

Estimate, cost of materials and labor:

378 feet of timber, at \$15 per M.	\$5.67
2 sills, 3x7 in. 20 feet long.	1 ridge, 2x7 in. 20 feet long.
11 beams, 3x7 in. 13 ft. long.	2 perkins, 3x4 in. 20 feet long.
30 flooring boards, at 28c. each.	8.40
53 ceiling boards (dressed both sides), at 28c. each.	14.84
54 ceiling boards (dressed one side), at 28c. each.	15.12
53 battens (half round, 1½-inch wide), at 6c. each.	3.18
10 planks, \$3.30; 15 boards, at 28c. each, \$4.20.	7.70
14 bunches shingles, at \$1.25c. each.	17.50
6 sashes, \$6.00; 3 panelled doors, at \$1.15 each.	9.45
2 lengths of tile pipe, at 50c. length.	1.00
Hardware, nails, and incidentals.	16.14
Painting, \$25.00; carting, \$6.00.	31.00
Carpenter's labor, not included above.	20.00
Total Cost, complete.	\$150.00

THE MASSACHUSETTS EXPERIMENT STATION has been established in connection with the Agricultural College at Amherst, by a gift from a friend of agriculture. This College has already rendered most valuable service to the farmers of America by

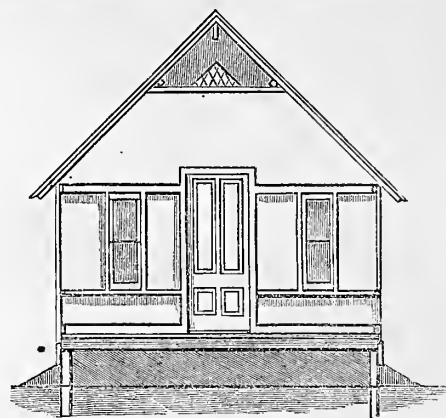


Fig. 3.—INTERIOR OF FRONT.

its experimental work, as well as by the educated young men it has sent out to influence good husbandry. It has done much to investigate fertilizer questions; with it the Massachusetts fertilizer law originated, which example has been followed by many other States, resulting in an enormous saving to farmers against the frauds that were formerly practised against them by unprincipled dealers. Its experiments on crop fertilization, the beet-sugar industry, and the flow of sap in trees, have also been of great value. Yet all this work has been done at the personal inconvenience of its officers from love of the subject, who were only paid for the work of instruction, and have had very little pecuniary help from State or individuals, in the work. The investigations now undertaken by the Experiment Station at the College, are as follows: In cultivation of amber sugar-cane, and manufacture of sugar therefrom; testing the comparative feeding values of Southern, Western, and Northern corn; testing the purity of farm and garden seeds; on feeding stock with reference to the best kind and amount of

foods to produce particular results, and a Lysimeter has been put in operation, the same as that on the American Agriculturist Experimental Farm, referred to elsewhere. Experiment Stations and farms are capable of doing incalculable good to agricul-

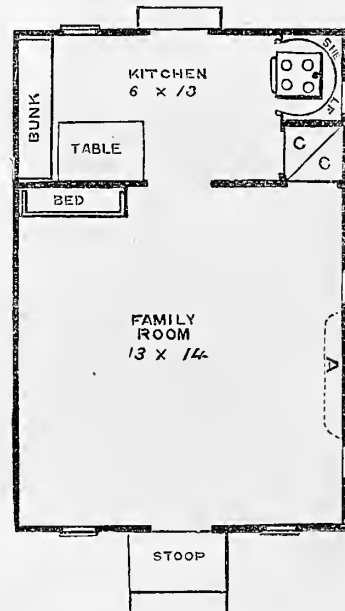


Fig. 6.—FLOOR PLAN.

ture; and it is a great stigma on the enterprise of our farming community that they are not established in every State. While in Europe there are hundreds; here there are only two Experiment Stations,

Agriculture in the Sandwich Islands.

BY EDWARD BELLAMY.

The three main groups of Polynesia, the Sandwich, or Hawaiian, the Tahitian, and the Feejee, have within twenty years risen to a very respectable rank among food-producing countries. Each of the five larger islands of the Hawaiian group has a wet and a dry climate, a hot and a cold one, with the gradations between these extremes, all lying within a day's ride of any point. The trade winds blowing steadily all the year round from the north-east, bring the rain clouds which, impinging against the lofty mountain ranges, are precipitated in showers that clothe the windward sides of the islands in perpetual verdure; while the leeward sides, receiving only occasional showers from clouds which pass the mountain gauntlet, are very dry. But against drouths the "lay of the land" around lofty central mountains affords a remedy in the numerous streams which furnish, in most seasons, ample supplies for irrigation. The perfection of the climate is such that the language has no word answering to weather. The Hawaiians have climate, but no weather. In any given place the temperature and density of the atmosphere are nearly identical the year round, but if change be desired, any variety of climate can be secured by removing a few miles either up or down the mountains, or from the windward to the leeward side, or the reverse. On the uplands of Maui there is generally snow-halling to be had in the winter; and on the highlands of Kauai fires are needed in July. The hottest portions of the islands are, however, by no

the equator. The explanation is the wonderful equilibrium of the temperature, which renders crops which will grow there at all safe as those which could endure considerable variation in temperature.

The soil is uniformly reddish in color, being formed by the decomposition of volcanic rocks. In texture it is extremely dry and light, and even where rains are most frequent, mud rarely accumu-

lated as even to make it difficult for visitors to obtain enough fruit for their private use.

Although the lowlands are essentially tropical in their productions, the uplands are a temperate zone in which the crops of the north flourish. Excellent Irish potatoes, although not large, are raised on Maui, and wheat is successfully, although not extensively, cultivated in certain parts. But sugar

planting has hitherto prevented any proper attention to other branches of agriculture. Not only have the latter been at a standstill for a number of years, but they have even retrograded of late, owing to the withdrawal of capital from them, to put into the sugar business. Before the reciprocity treaty, which admitted Hawaiian sugar into the United States free of duty, the sugar-planters in the Islands lived on hope entirely, though in 1873, just before the treaty, the exportation reached 23,000,000 lbs. But the middlemen, the Honolulu merchants and money-lenders, to whom the crops were all mortgaged, were the men who made the money. The immediate effect of the treaty was to put a bounty of 50 per cent on all the sugar produced. At this time the business received an enormous impetus,

and at present is the principal commerce of the Islands; and its growth and manufacture the principal industry. The gross profit of the mills at once became 100 per cent, leaving them, after the enormous deductions for interest money and middlemen's expenses, a clear profit of half that. Plantations which were in a tolerable condition, at once began to roll up fortunes, while planters, who had been in a desperate state, were placed on the high road to wealth. There was a prodigious rush of capital into sugar-planting. Men sold all they



HOUSE OF THE NATIVE SANDWICH ISLANDER.

lates. Within an hour or two after the severest storms the roads are dry. The larger part of the arable land lies in broad alluvial strips running around the shores, and extending five, ten, or twenty miles inland. Above this region are extensive uplands, more suitable for grazing purposes, and then come the mountainous crests of the Islands, towering up ten to fifteen thousand feet in peaks, each of which is an extinct crater, from whose mouths the lands below were originally vomited forth. Extensive forests occur among the central mountains of each island, and also diversify the lowlands. They are usually so dense as to be traversable only with the assistance of the axe, and are broken by innumerable profound chasms and deep circular pits, which were active craters at a period in the islands' history when their surface was pimpled more thickly with burning volcanoes than is a small-pox patient's face with pustules. The trees in these forests are overgrown with masses of ferns and parasites which interlace and bind the whole jungle so as to make it almost impenetrable. Large tracts on all the islands have been devastated by lava flows, and lava fields stretching for miles are of frequent occurrence. Of course these do not offer very eligible sites for plantations, but still it is astonishing what extremely fertile soil this lava makes when broken up. It actually seems as if the cooking process to which it had been subjected had prepared it the better for agricultural operations. It is no uncommon thing to find the natives raising their sweet potatoes on hardly cooled lava, merely broken up a little, and mixed with volcanic ashes.

For fruit lovers these islands are a paradise. Oranges, bananas, cocoa-nuts, mangos, mangosteens, strawberries, guavas, pineapples, figs, tamarinds, chiramoyas, alligator-pears, and all kinds of melons, peaches, citrons, grapes, limes, Ohia apples, raspberries, are but some of the fruits and berries of these fortunate isles. The oranges and bananas, as well as the fruits generally, are of unusual excellence, and far from being difficult to cultivate, only ask to be permitted to grow. The proximity of the San Francisco market, and the close steam connections with that place, as well as Australia, are circumstances which point to the fruit-growing business as one of the most promising industries of the islands; but at present it is so unaccountably neg-



HAWAIIAN DRESS.—MALE.

means oppressive, even for out-door labor, owing to the constant breeze from the sea. It is difficult for the visitor to understand how a country whose climate is not so hot as that of the Northern States, can yet be so essentially tropical in its products, growing almost everything that can be grown under



STONE IDOL.—GOD OF AGRICULTURE.

lected, had, begged or borrowed what cash they could, and put the proceeds into a plantation. All other kinds of business suffered paralysis; everybody was anxious to share in the sweet harvest. Everywhere in the Islands, out of Honolulu itself, sugar is the only theme of conversation. It is like a gold min-

ing excitement, and indeed the owner of a plantation, in good running order, has something very like a bonanza. Under its stimulus, the importation has probably more than doubled, so that at present the amount of the annual subsidy paid by the United States government to the Sandwich Island sugar business is at least half a million dollars, and will probably reach a million a year in the next six years, for the amount of sugar-land under cultivation increases yearly by a large ratio. As to the planters, it is certain that the Treasury could not be bled for the benefit of a more genial, gentlemanly, and hospitable class of men, but perhaps the propriety of singling out any class of foreigners, however personally agreeable to be enriched out of the American public pocket, may be called in question. The advantage is so obviously all on the Hawaiian side, that it is certain the treaty never would have been made, but for a vague notion in this country that it was a preliminary step to annexation. But it would be cheaper to buy the Islands than to renew it for another ten years.

Should any one be moved by the brilliant returns of sugar planting under the treaty, to remove to the Islands for the purpose of engaging in it, the consideration should be borne in mind, that it requires three years to get a plantation into full paying condition, and that this would probably leave possible but three "treaty crops," as the planters call them, before the end of the six years of plenty, and unless these were exceptionally good, they would leave no great profit over first cost of land and mills. Moreover, although there are still great tracts of good cane lands unoccupied, especially upon the large island of Hawaii, the entire lack of roads and fewness of convenient shipping points on the coast, limit the number of really eligible sites for plantations. All transportation must be done by mule-back over rocky and break-neck paths; and if any railroads or good highways are built, they must be at the expense of the planters, the government is so poor.

Among the Farmers.—No. 30.

BY ONE OF THEM.

Connecticut River Meadows.

What is more beautiful than the grass? Certainly the people along the Connecticut should admire it. I thought in this eminently grass season that the fields in Bergen County, N. J., looked wonderfully well, and rejoiced in it as something to be proud of; but a sight of the luxuriance of the growth of June grass and Red-top in the pastures on the south meadows at Hartford, subdued any such feeling. I refer particularly to the meadows within the dyke protecting Colt's Armory, and that whole section of the town from the rise of the river. This land, like the whole of that interesting formation—the Conn River Meadows—was formed by the wash of the river, is prevaillingly level, and was over-flowed by the river once or twice annually. The stream being at these times exceedingly turbid, carried finely comminuted silt over the quiet expanse afforded by the meadows, and here it was deposited. This silt forms a most excellent soil, which will produce fair crops with little or no manure, though contributing regularly to the fertility of the up-land.

One usually observes, rather painfully, on luxuriant pastures, how that the last year's droppings cause a rank growth not relished by cattle, hence conspicuous; but there was very little of this, and certainly as vigorous and uniform a growth of grass as I ever saw. The superiority of the grass not now flowed over annually to that which is outside the dyke, indicates that the soil has been improving all these years, through the action of the air and its own gradual decompositions and changes.

Reclaimed Swamps.

Some time last year, I told the readers of the *American Agriculturist* something of Mr. Augustus Storrs' reclaimed swamp in North Mansfield. I have been there again, and instead of the bogs and tussocks, and roots, and heterogeneous tangle which the plows had ripped and rumpled, and the harrows had twisted and torn, there was a smooth

beautiful field neatly plowed, harrowed level and smooth, part of it seeded down with oats, and the part which was worst last year, nearly ready for a second corn crop. It seems almost miraculous. There were in places last year strips of sod cut by the plow, and turned over, which were tenacious enough to have held together, if a team had been hitched to one end of 30 or 40 feet, and I presume might thus have been hauled off the field. Now, that sod is nearly gone; in most places the ground is friable and mellow, a few clods and roots remain, and there were a good many sticks and stems of long-buried timber which the plows turned up. These, with the stones on that part next to the up-land, were being picked off, and a new drain, to cut off the springs at the foot of a stony slope, had been dug, and was being stoned up and partly filled with the fine stones off the meadow. A big wall has been built along this slope, to get rid of the stones; it is about 5 feet high, and from 6 to 9 feet wide. A wall-layer employed on the farm, builds from 7 to 9 rods of a single wall 3½ feet high in a day, assisted by one laborer—rapid work that.

Disk Harrows Again.

Mr. Storrs was trying the Randal harrow in the meadow, and it did capital work, especially upon those parts where a tooth harrow would tear up the not yet thoroughly disintegrated sods, and roll them over the surface. The operation of the disks is to hold a sod down, and at the same time to scrape or cut a slice of soil off from it—that is, when the sods are very tough. When, however, they are tender, the disks cut them up, and so disturb them as to prevent growth—either turning the pieces over, or scraping up the soil adhering to them. Several times harrowing will make mellow ground even of a green sward. On the tough spots the harrow had to be heavily loaded, so that with the driver the whole weight was probably equivalent to 300 or 350 lbs. This would have put the disks in above their axles if it had been in ordinary ground, but here they ran just deep enough to work well.

I have known and approved these harrows ever since Mr. Nishwitz put his first disk harrow upon the market through the agency of the New York Plow Company, though I have never used them upon my own farm, until this year, it being stony and rough. This year, Messrs. R. H. Allen & Co. sent out some for me to try, and report to them as to their comparative merits. We gave the harrows a very thorough trial, on all sorts of ground, and they have done exceedingly well. In the matter of actual pulverization, they do not work so well as the square-toothed harrows; but they make mellow soil, and do not tear up the sods; they cover broadcast grain splendidly, and leave the land level, and in good shape, with little sod showing.

Shorthorn Cattle.

Every time that I see a good herd of Shorthorns, I am oppressed with feeling that other breeds are not of very much account after all. Not that I hold this opinion, nor that anybody does, but the contrast between such a herd and the Jersey, and Ayrshire, and Devon herds is so great, and the cows are so broad, and straight-backed, and deep, square-bodied, and big-shouldered, and soft and mellow-hided, and so abundantly clothed with beautiful wavy hair, and have such prettily incurved horns, and carry their heavy bodies on such proportionately light limbs, and altogether are so high-bred in style, and so majestic in presence, both bulls and cows, that other breeds suffer in comparison. Mr. Storrs' farmers showed an eight months' old calf that weighed about 700 pounds; yet had been fed only simple food, with a daily ration of skimmed milk.

Clean Roadsides.

The roads throughout this country are so wide that the broad strips of neglected ground between wall and wagon track make the journey along many highways seem to be through a wilderness of low trees, bushes and briars, stones and rubbish. Now, my friend of North Mansfield is a naturally neat and orderly man, and this state of things, prevalent as it was in his neighborhood—and in whose neighborhood is it not prevalent, unless some lover of neatness and thrift has made a stir among the rubbish—distressed him not a little,

so he has kept his men at work along the roadsides whenever they have had spare time, hacking away with their bush-scythes, and clearing away whatever is unsightly, until one may now recognize land which he owns by the clean greensward which everywhere extends from the fence to the roadway. The small outlay will be more than recompensed in most cases by the strip of good grass land which is virtually added to the farm. I have such a strip—a short one, I regret to say—from which I get at least one cutting of good hay every year, and every man might do the same where the dust and wash of the road keeps the ground in good heart. Neglected roadsides and hedge-rows are nurseries for all the weeds that can pester a farmer; they are lodging places for mice and rabbits, skulking places for foxes and other vermin, and no good anyhow.

The Bush-scythe in the Pastures.

It is not alone by the roadside that the bush-scythe may be swung to advantage. Let the men get over the fence; not that most farmers will have the roadsides cleaned up first, but whether or no, there will unfortunately be a fence to get over. I heartily wish there were no fences, nor any need of them. This, though written in May, will be read in July, and that will be just the time when the bush-scythe will do the most telling and killing service. From the 1st, or better, the middle of June, to the 1st of August, the bushes may be cut to death very easily. Earlier there is so much of the stored vitality, which enables plants to push such vigorous growths in the spring, still left in the roots and stumps, that they grow right on after being cut down, with scarcely diminished vigor; and later the ripening wood and fresh stores of pabulum laid up for the next spring's needs, will so far have increased that the cutting will not be fatal. If we attack the enemy when his provender is lowest, "between hay and grass," victory will be pretty sure to perch upon our scythes.

Cutting Brush in Winter,

or early spring, has some advantages, especially where sheep, colts, or even calves, are pastured; for the succulent stems of briars and rose-bushes, white birch, and many other shrubs, are so much relished by them that the amount of feed is really greater; and they keep the growth down, in the case of sheep, to such a degree that many things will be killed in the course of the summer.

A Farm Lumber-yard.

One thing more before I leave Mansfield. With plenty of space along the road near his house and barns, where he could pile saw-logs, fence-rails, and posts, boards, and timber, Mr. Storrs actually bought an acre of ground for a lumber-yard. Here are the piles of plank for stone-boats and such like, for stable flooring, boards for all purposes, posts, rails, and old and new lumber, and timber of all sorts. Since seeing this yard, and the convenience of it, I have wondered at the rubbish which thrifty and good farmers suffer to accumulate about their houses and barns, and especially along the roadside near their houses. It is so easily and conveniently remedied.

FEEDING PORK.—Pork is now lower than it has been for 30 years, and the prospect for those who have many hogs is not agreeable. Yet it would not be wise to sacrifice good herds on this account. Those who have not, will find this a good opportunity to weed out their stock, and replace it with a better quality of animals in preparation for the time which is certain to come, when pork shall again bear a profitable value. The chief profit from pure-bred stock consists in its early maturity; and the fact that a pig of a well selected breed and properly fed, can be made fit for the barrel at less than a year old, makes it of far greater worth than one which requires two years to arrive at a salable condition. To keep only the best stock should be the aim of every one who rears animals for sale; and there is no better time to begin to improve one's stock than when the value is low, and it can be done at the least expense.

Talks on Farm Crops.—No. 17.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

The Doctor used to be a great advocate for hoeing early in the morning. A neighbor of his, a German gardener, was quite celebrated for raising large crops of cabbage, and the Doctor thought it was because he hoed while the dew was on, and he used to tell me this because he wanted me to rise earlier. All I can say is, that if anybody wants to hoe cabbages before sunrise, I have no objection. But I do not believe that the small amount of water they secure in this way is of much benefit to the plants. The hoeing, especially deep hoeing, is good, but the thorough use of a horse cultivator is better. And I do not see any special advantage in working horses before breakfast. If men and horses get a good night's rest, and are in the field by half-past six, prepared to do a good day's work, it is all I ask. If they are half an hour later in the stable, provided the time was spent in cleaning the horses, I should not object. And so at noon and night. I would rather the horses were thoroughly cleaned, their shoulders washed, the collars examined, and everything made neat and comfortable, than to have the men keep at work until after sundown. Men and horses that work early and late, are apt to loiter during the day. Fewer hours and livelier and more energetic work will be one of the features of our coming agriculture. I like to see a man work when he works.

"Never mind all that," said the Deacon. "I think you will admit that it is a good thing to stir the ground when the dew is on."

"Certainly," said I, "and it is a good thing to stir the ground when the dew is not on. Or rather, it is a good thing to cultivate and hoe and kill weeds. The weeds on many an acre of potatoes and corn pump up more water from the soil every day than all the hoeing you could do night and morning to cover up dew, would furnish in a month. The fact is, the water from a slight shower, or from the heaviest dews, rarely reaches the roots of plants."

"You need not tell me," said the Deacon, "that the dews and showers are of no benefit to the crops."

"No one doubts it," said the Doctor. "The dews and slight showers check evaporation. To a certain extent they give the plants rest. During a hot day, we all know that the leaves of corn curl up. The evaporation of water from the plants is greater than the roots can take up. But during the night, evaporation is checked, and the roots keep pumping up water from the soil, and in the morning the plants are full of sap. Probably the main reason why plaster is so beneficial to clover, is due to the fact that it checks evaporation."

"That is a new idea to me," said the Deacon. "We all know that plastered clover is full of sap in a morning, and the dew lies on it longer. I supposed the plaster attracted moisture from the air."

"Not it," said the Doctor. "It has no such power. But it has been proved that if you have two plants growing in vessels of water, and you put plaster in one and leave it out of the other, the one with the plaster will evaporate less water than the other. It is a very remarkable fact, and throws new light on the action of plaster as a fertilizer."

"It shows," said I, "that plaster is likely to be of far greater benefit on rich land than on poor land. And I think experience shows that the better we farm, and the drier the season, the more good do we get from the use of plaster on corn, peas, potatoes, and clover."

"I thought you would say that," remarked the Deacon. "You seem to have no faith in anything except draining, killing weeds, and making manure. And I will say this for you, that your underdraining has given you this spring a great advantage over those of us whose land is not drained. I have rarely known the land so wet."

"Why, then," said the Doctor, "do you not go to work and underdrain? The mere advantage of being able to plow a week or ten days earlier will more than compensate for the labor and expense of draining the land. Farmers cannot keep up

with the discoveries of the age, and avail themselves of the wonderful benefits to be derived from the use of artificial fertilizers, unless they drain the land wherever drainage is needed."

"Good," said I, "that is pre-eminently true; and it is also true that artificial fertilizers do very little good unless we secure good tilth. And it is impossible to secure good tilth if the land is not drained either naturally or artificially. When the land is drained, we are prepared to go ahead with our improvements. Our cold winters and hot summers give us great advantages."

"I would like to know how," said the Deacon.

"The winters are long," said I, "and this gives us time to make preparation for the busy season. The summer is hot and dry, and this gives us a grand chance to kill weeds. The autumn is long, and this gives us time to prepare for the sharp work of our late and short spring. But all this requires great promptness and energy, and no little forethought, and good judgment. There is one thing I am thoroughly convinced of—we must get our land ready for spring crops the summer and autumn previous."

"I do not believe in summer-fallowing," said the Doctor. "And you yourself, though you advocate the practice, seldom adopt it."

"All the worse for me," said I; "I have frequently sown land to oats or barley when it would have been far better for me to have summer-fallowed the land. I do not say the two crops, barley and wheat, will not bring in more money than one crop of wheat after a summer-fallow. But look at the difference in the condition of the land! Look at the clover after a good summer-fallow on strong, dry land, especially if you have used lime. But if we can not afford to summer-fallow, we can afford to fall-fallow. I have plowed some of my land three times this spring for mangel-wurzel. If I had plowed it twice last autumn, one plowing this spring would have made it in better condition."

"Yes," said Charley, "and the land that is plowed early in the fall, and well worked, turns up well in the spring, and is fine and mellow."

"Of course," said I, "much depends on the nature of the soil. It would be absurd to plow light, sandy, or mucky land as often as clayey land. The sandy-land farmer has many advantages over the heavy-land farmer. And this is particularly the case since the introduction of good artificial fertilizers at reasonable prices. I have both kinds of land on almost every field on my farm. It is something of a nuisance. The sandy knolls require more manure, and the clayey intervals more and better tillage. By a little planning, you can plow the heavy portions of the field in the fall, say in September, while the sandy portions can remain in grass and be pastured. Put three horses on to the plow, and turn the sod over, and then roll the land."

"I have thought," said Charley, "that I was pretty good at working and cultivating land, but every time I visit one of our nurserymen or market gardeners, I come home feeling that we have much to learn and still more to practice. 'Comparing ourselves with ourselves is not wise.' We certainly cultivate our corn and potatoes more thoroughly than people did twenty years ago. We have better cultivators, and use them more frequently. But still, as compared with our nurserymen, market-gardeners, seed-growers, and even with our best farmers, most of us are still clod-hoppers! We must wake up. We must have more faith in ourselves and in the soil. We must indulge in the luxury of thorough cultivation. We must have fewer clods to hop, and less weeds to hoe. We can farm better, and more profitably, if we only make up our minds to keep ahead of our work."

"Which sounds very fine," said the Deacon, "but how are you going to do it?"

"I can tell you, Deacon," said the Doctor, "how you can do it. Hire an extra man, and never let your horses be idle. Keep them cultivating, plowing, harrowing, and working the land whenever you have opportunity. Give your corn a good horse-hoeing each way, once a week, all through July. Cultivate the potatoes as long as it is safe to do so. Do not sow corn-fodder broadcast, but drill it in rows wide enough apart to admit the use of the

horse-hoe. The benefit will more than pay for the labor, and the appearance of the land after the crop is harvested will be almost certain to induce you to adopt a better general system of farming. As soon as a crop is off the land, plow it. No matter how clean it is, plow it. No matter how foul it is, plow it. You will find no lack of work for your teams. I go about the country a good deal, and while I sympathize with a man who is poor and behind hand with his work from lack of means, I have little respect for a well-to-do farmer who digs his potatoes in August and lets the vines lie scattered all over the lots until the next spring. It has a slovenly appearance. It is bad taste and bad farming. Why put off until spring any work that can be done to far greater advantage now?"

"If I did plow my land after digging potatoes," said the Deacon, "I would sow it to rye, and plow it under for manure next spring."

"Very well," said the Doctor; "I have no objection. Do what you like. Only do not let the land and the horses lie idle."

"If I plow the land," said the Deacon, "and sow nothing until spring, does it not lie idle?"

"Not a bit," said the Doctor. "It lies idle if you don't plow it. A weedy corn-stubble, or a potato field, left as though the hens had been scratching the potatoes out of the hills, has an idle loaferish look. But plow it, and make it neat and clean, and it looks as though it was up and dressed and ready for business!"

Lean Cattle for Europe.

Good news for American stock-breeders is the demand for live cattle by German and English farmers. Recently a ship-load of Western cattle were landed in Tönning, to be fattened on the rich pastures of Schleswig-Holstein. Relative prices of young stock there and in this country warrant the importation of these young lean cattle for the purpose. This cargo, numbering 322 head, 15 horses, and 46 swine, besides some fat cattle, horses, and swine for England, were purchased at Chicago, and were so well received by the German farmers that the vessel was at once sent back for another lot. "The ship arrived in the harbor under salutes of cannon and a display of flags, and hundreds of people lined the quay." There is also quite a demand in England for lean cattle and hogs for fattening; and in the embargo against the importation of live cattle at English ports, an exception is made in favor of those from America. This, together with the increasing call for finely bred stock from this country for Europe, argues well for our agricultural interests. The more our attention is paid to stock-farming, instead of such exclusive grain and other crop production, the better will it be for our farming. English agriculture dates its present advanced position from the beginning of heavy stocking of its farms and generous feeding, which added largely to the fertility of the soil, and caused a consequent increase in the yield of crops.

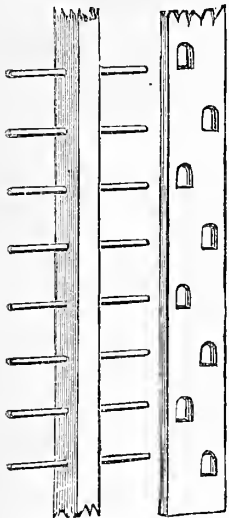
Wool and Mutton.

Wool is low; and wool producers look in vain for any hopeful sign of returning high prices. Threatened changes in the tariff cause uncertainty; which inevitably acts unfavorably upon the production of an important staple like wool. But with or without a tariff, we have no fear that wool can not be profitably produced in this country. We have an enormous business in manufacturing woollen goods, which must be supplied with home grown material. Not many months ago we gave some facts in this regard which have been widely republished by other journals and which will still be fresh in the memory of our readers. Those facts showed conclusively that, no kind of wool we could produce could go a begging for a market while the people needed carpets, blankets, and woollen clothing. We shall probably have to wait many years before seeing wool sell at a dollar a pound; perhaps it may never bring that figure again. But as a rule a sheep pays its expenses with its wool, and gives us a lamb as profit under the worst of circumstances. This ought to be satisfac-

tory. Further than this, the sheep husbandmen of this country must pay more attention to mutton: instead of being quite secondary, it should be of equal importance with wool; and when it is so considered, and breeding is conducted accordingly, the price of wool will no longer determine the absolute profits or losses of the business. Mutton production has been greatly neglected by our sheep farmers; but on the lower prices of wool, we trust it may take its due prominence, as the demand is increasing, and always brings a relatively high price. As in all cases "the best, pays the best," it is the business of farmers to choose that kind of sheep which will give the most and best wool, the highest quality of mutton, and which are sure and prolific breeders. Even in the far West, where wool should pay handsomely at 25 cents a pound, and where pasture is the cheapest, it is found to pay the best to infuse pure blood into the flock, thereby producing superior wool. How much more then should Eastern wool growers find it to their interest to improve their flocks so as better to meet the present difficulties.

Hints and Helps for Farmers.

BARN LADDERS.—Our frequent correspondent, L. D. Snook, of Yates Co., N. Y., sends some devices for barn ladders,



1. POST & PLANK LADDERS.

which, although not altogether new, may be fresh to many young farmers. Figure 1 represents two kinds of these. That upon the right hand consists of a plank fixed to the side of the building where needed, in which a sufficient number of alternate holes are cut, as shown, to serve as steps. Another method is to insert pins into a post of the frame by which the ascent to an upper floor can be made with ease. Or a ladder, as indicated at figure 2, may be affixed to the frame.

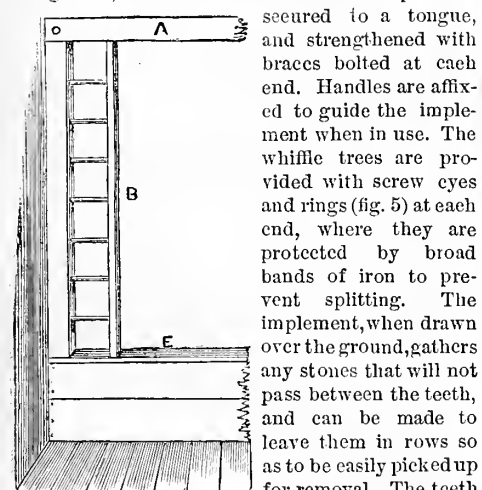


Fig. 2.—LADDER IN FRAME.

STONE GATHERER AND CLEVIS.—J. L. Douglas, of Belleville, N. J., sends a sketch of an implement for gathering stone and mellowing the ground (see fig. 4), which is made as follows. A plank 8 inches wide at each end, and 12 inches wide in the center, and three inches thick, is cut in the shape shown. Holes 3 inches apart are bored, and teeth, made as at figure 6, are fastened therein. The plank is secured to a tongue, and strengthened with braces bolted at each end. Handles are affixed to guide the implement when in use. The whiffle trees are provided with screw eyes and rings (fig. 5) at each end, where they are protected by broad bands of iron to prevent splitting. The implement, when drawn over the ground, gathers any stones that will not pass between the teeth, and can be made to leave them in rows so as to be easily picked up for removal. The teeth

are fastened in places by means of nuts in the screws at the upper ends, a washer being placed beneath each nut to protect the wood. At figure 3 is shown a clevis suitable for a plow, harrow, or stone-boat. It is provided with a swivel hook, fastened by a nut and screw.

A SPRING LATCH FOR A GATE—GATE POSTS.—"O. B.," Brumfield Station, Ky., sends these items:

The latch shown at figure 8 is made of hard-wood; is 2 feet long, 3 inches wide for 5 inches of its length where it enters the post, and one and a half inches wide for the rest.

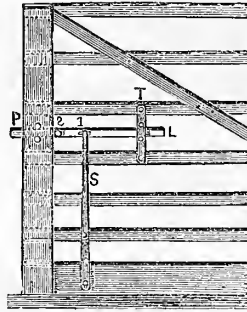


Fig. 8.—HANDY LATCH.

It works between the upright bars of the gate, and is kept in place by pins passing through these, and seen at P. The other end works between short pieces fastened to the level bars of the gate at T. The spring, S, is made of locust or other tough timber, and is fastened to the two lower bars. A pin, marked 1, receives the force of the spring, and another marked 2, prevents the latch from going too far. The catch should be made of a piece of hard-wood 4 inches wide, 6 inches long, and 1½ thick, beveled at one end for half an inch. A mortise is cut in the post, an inch from its front edge, 1 inch wide and deep, and 4 inches long. The pin, 2, is placed so that the latch will enter the post ½ of an inch. The wood of the post between the catch and the mortise, is cut away with a chisel, and given the same

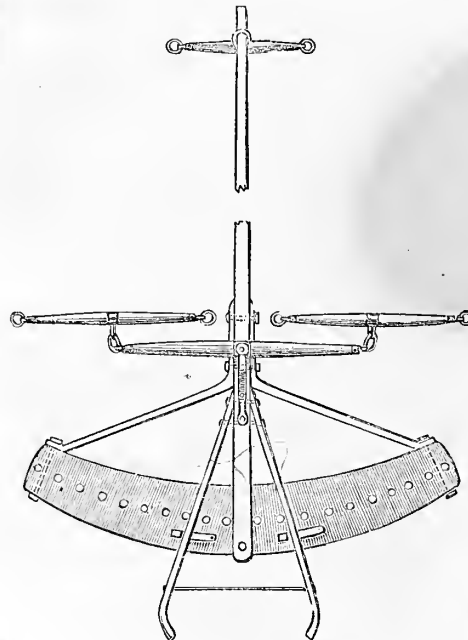


Fig. 4.—DOUGLAS' STONE GATHERER.

slope as the catch. This is shown at figure 7; the piece added to the post being shown by the dark shaded portion. An arrangement of gate posts, whereby any danger of sagging of the gate is avoided, is shown at figure 9. The blocks, A, and the sill, B, which is aided by the wedges, W, hold the posts rigidly, and enable them to support the weight of the gate.

SELF-BINDING HARVESTERS.—There is never a need for a thing but it comes to our hand through the skill of the inventor and the enterprise of the manufacturer. The development of the immense plains of Northwest Minnesota as a wheat-growing country, opened up a demand for a self-binding harvester, and the almost immediate supply of several different effective machines, gave a great impetus to wheat-growing on a gigantic scale. Fields of thousands of acres in extent are now frequent, and one Minnesota farmer is operating 76 of these machines the present season, the total capacity of which will be 1,500 acres per day. This is farming on a grand scale, only possible by the fortunate coincidence of immense tracts of fertile level land, and harvesters of this complete character. The moderate cost of these machines, however, should induce their use on smaller farms, or



Fig. 5.

their ownership by persons who will harvest grain on contract, the same as threshing is done.

Canning Fruits and Vegetables.

The process of putting up ordinary fruits in self-sealing glass jars is now so simple and well understood, that it is practised in almost every family. Those who readily succeed with peaches, pears, the various berries, etc., find that when they try tomatoes, green corn, and other vegetables, in the same manner, they fail altogether; and as the season approaches, we receive numerous inquiries about canning these articles. There is no secret about canning corn, peas, tomatoes, etc., but the trouble is that the process is not one that can well be performed by women, and with the ordinary appliances of the household. The treatment required by these make tin cans necessary, and involves a long boiling after they are sealed up. The Oneida Community, celebrated for the excellence of their products,

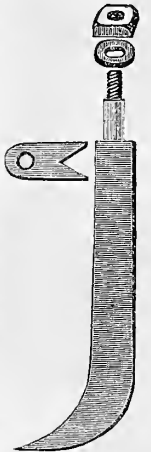


Fig. 6.—TOOTH.

long ago published freely every step of their process, and others have given accounts of the methods, and the more there is known about them, the more evident it becomes that the canning of certain articles is a distinct branch of manufacture that can no more be readily introduced into the family than shoemaking or weaving. The general routine is, to fill tin cans with the article to be preserved, and to solder tight. The cans are then placed in a boiler of water, or in a tank which can be supplied with high-pressure steam, and kept at the temperature of the water or steam for a certain length of time. This operation is called in the trade "processing," and much of the success depends upon the length of time each particular article is "processed." Some years ago we went through a canning establishment with its proprietor, who kindly showed us every detail of preparing and putting up. At last we reached the great vat, where hundreds of cans were being boiled in water.

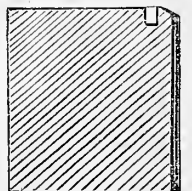


Fig. 7.—MORTICE FOR LATCH.

"How long are these cooked here?" we asked. "Ah, that is our process!" was the reply, and that was the only secret we found about the whole establishment. Some manufacturers, instead of cooking the cans in water, use a strong brine of salt, or of chloride of calcium, either of which boils at a much higher temperature than clear water, and insures a more thorough cooking. Green corn is one of the articles about which the most frequent inquiry is made, and is one which gives the regular

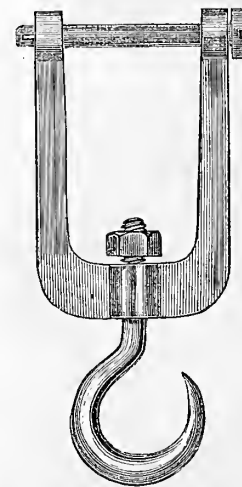


Fig. 3.—CLEVIS.

canners more trouble than any other. The corn is cut from the cob, and the cans filled. In some establishments the cobs are boiled in water, and the liquor thus obtained is used to fill up the cans so that there may be no air spaces among the kernels; others use a weak syrup of sugar and salt, to fill up with. The cans are then soldered tight, leaving a vent-hole, a mere pin-hole, in the center of the cover, open, and "processed," i. e. set in a vat of water, and boiled for two hours. Each can is then taken out, set upon a bench with a sudden jar, to

shake the corn down, and allow the steam to escape; the top of the can is then pressed inwards as much as possible, the vent-hole soldered tight, and then the cans are returned to the vat, and "processed" for four hours longer. Tomatoes are canned in a similar manner, but they require less than

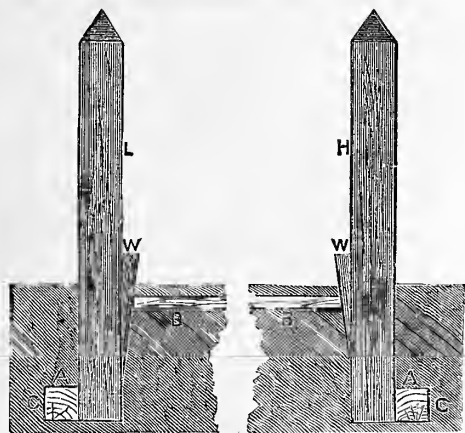


Fig. 9.—GATE POSTS.—(See opposite page.)

half as much boiling in the "process." It will be seen that the difficulties attending these operations in an ordinary household are such that it can seldom be advisable, especially as the products are sold at such moderate prices, to undertake them in the household. We are sometimes written to for instructions by those who would undertake canning as a business. To such we would say that it would be highly unsafe to start such a business with no other knowledge than they could get from the mere instructions of any one—even those the most experienced. It is a trade, of which, like any other trade, the general principles can be described, but success will depend upon skilled manipulation, which can only be given by those who have worked at it. Such persons should either employ a skilled foreman or superintendent.

Neatness In the Dairy.

Quality is always a measure of value; and unless perfect cleanliness is observed, the quality of butter or cheese can not be of the best. The dairyman or farmer may not perceive any difference, but the expert buyer, or the fastidious consumer, will instantly detect inferiority in flavor, and hence be slow to purchase. Means for washing or brushing

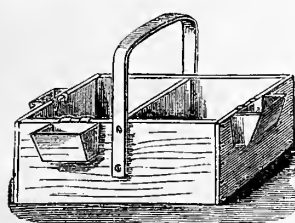


Fig. 1.—FOR CLEANING COWS.

cows are rarely seen in a stable, and still less frequently is opportunity offered for cleansing the hands of the milkers. So that in the great majority of cases impurities invariably get into the pail, are dissolved by the milk, and become absorbed by the butter. Dairy men admit the value of cleanliness and skill; but are not always aware of what constitutes proper cleanliness. As a blind man has no conception of a brilliant sunset, so some persons can not understand what perfect cleanliness and purity are. We were never more impressed with this fact than when visiting the Echo Farm Dairy at Litchfield, Ct. There the stalls were cleanly sanded, and without stain; not a loose hair was to be found upon the cows; the stable was spacious, airy, and well lighted; the cows udders were scrupulously clean; the milker's hands were carefully washed before milking, and even the conversation of the hired men was clean, foul language or noisy talk being forbidden and avoided. The most scrupulous

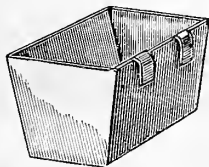


Fig. 2.—WATER-BOX.

cleanliness was carried out in the dairy, every utensil was pure and bright, and the dairymaid who superintended the butter-making was a pattern of feminine neatness. No one, however fastidious or exacting, could object to the product of this dairy; and there is no reason why the same methods could not be observed anywhere. A cottage can be kept as clean as a palace; and a very ordinary dairy can be made as clean as that of the Echo Farm.

We give herewith a few hints as to how this cleanly management may be practised:—All droppings should be removed out at least once a day. The litter should be short; sand, sawdust, or earth, being better than straw.

The cows should be cleaned, carded, and brushed daily, and in the spring, when the coat is falling off, they should be brushed before each milking. The stable should be well lighted, and kept white-washed and free from dust and cobwebs. Before the milking, the udders should be brushed, wiped, or washed; if washed, they should be thoroughly dried at once to avoid cracking of the teats, and clear water be used. We find a brush, or a sponge, preferable to a cloth for this purpose. A small box, arranged as in figure 1, will be found convenient. A leather strap is fastened, as shown, for a handle. The box is divided into two compartments, to hold a card, brush, sponge, and towel, and has a small pocket at each end to hold soap and some common cerate or ointment. A pail of water is taken into the stable; and to prevent fouling, a common pressed-meat can (fig. 2) is used to hold the water; the cover of which is clipped in such a manner that it may hang upon the side of the box. By this system, the labor is very slight, and a small boy or girl can go ahead of the milkers and prepare the cows. If the teats become scratched or cracked by accident, a little of the ointment should be applied to them, this being removed when the udder is cleaned preparatory to milking. There is no need to moisten a cow's teats to draw the milk easily; that is a practice to be avoided in well conducted dairies.

A Portable Sheep Pen.

Many sheep are lost from disease, caused by exposure to the hot sun of the summer months. Dysentery is a frequent complaint thus produced, which a cool airy shelter might prevent. We have found it very convenient to have even a rough shelter, made of poles and rails, and a roof of boughs and straw, in the pasture, to shade the flock from the midday sun. But this, although cheap, is often more costly in the end than a more expensive shelter. A permanent shed, built in a light manner, and mounted upon wheels, for instance, would be far more useful, and although more costly at first than the cheaper shed, would in the end pay a better profit on its cost, if it did not actually cost less at the end of 5 years than the former, with its several removals and renewals. We give herewith some suggestions of such a shed as we would build if we were in present need of one. The shed should be made with a light frame, 18 or 24 feet in length, 9 feet wide, and 6 feet high

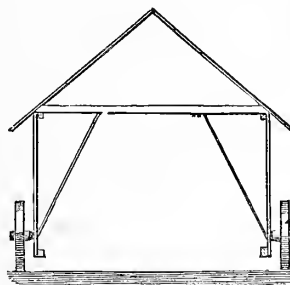


Fig. 1.—SECTION OF SHELTER.

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to the eaves. The frame would consist of two sills, two plates, four posts on each side, four cross beams, and a light roof, as shown in section, at figure 1. Braces of iron rods would serve to keep the sides from spreading, and to support the axes of the wheels. Four wheels, 2 feet in diameter, would be required. The sides should be boarded to the bottom, but the ends only half way down, as at figure 2—in which the shed is given in perspective. The sheep can then go in and out as they may feel inclined. A shed of this kind and size would accommodate 35 to 40 sheep, and need not cost over \$20, all complete. Where straw, or

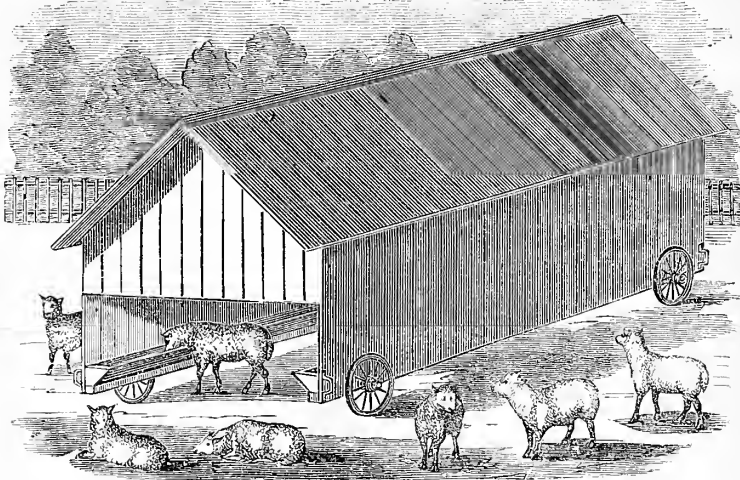


Fig. 2.—PORTABLE SHEEP SHELTER.

coarse long grass is to be had, either may be used for the covering, if the frame is well made and stiffly braced. Feed-troughs should be furnished, in which bran or grain may be given. The cost of one of these sheds would be repaid each year, if only in the saving of manure, which would otherwise be dropped in the fence corners, where it is wasted, as the sheep huddle there through the day for shade. The comfort and health of the sheep would be much improved; which means profit.

Feed-Racks for Yards or Fields.

We give herewith, in response to some inquiries, some illustrations of cheap and convenient racks for feeding green crops to stock, for use in yards or



Fig. 1.—FEED-RACK FOR SOILING PURPOSES.

fields. Either complete or partial soiling is now very frequently practised, and many farmers and dairymen find it impossible to do without this help during that part of the season when pasturing fails. Early platted corn-fodder is now nearly ready for use, and in feeding this a great saving is gained by the use of racks which prevent its waste. At figure 2 is shown a common form of feed-rack; easily made, and which, if three feet square, will accommodate 4 cows without danger of quarreling. It is made of fence strips nailed together and braced as shown. Wrought nails should be used, and the same be securely clinched. A larger rack, useful for cows or sheep, is shown at figure 1. This may be made of fence strips with 4 x 4 scantling for posts, and in size 16 feet long by 4 feet wide.

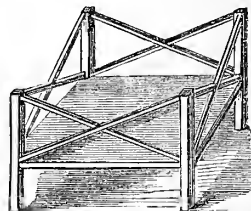


Fig. 2.—CONVENIENT FEED-RACK.

BUCKWHEAT.—It does not pay to make a naked fallow, even to clear land of weeds. For to leave the soil idle for a season, is a waste of resources,

when the same useful effect can be gained in another way: any weedy, rough piece of ground may be plowed early this month, and sown to buckwheat, using a bushel of seed per acre. The weeds will thus be smothered; the rough ground be mellowed; and a fairly profitable crop be gathered. We have seeded land to timothy and clover with buckwheat sown as late as the 12th of July, and had a good catch. Otherwise the ground will be in good condition for preparing in the spring for corn, or for seeding down with barley, or alone, without any foster crop.

Straw or Fodder-Barracks.

When barn-room is short, a convenient substitute may be furnished by open barracks built in the

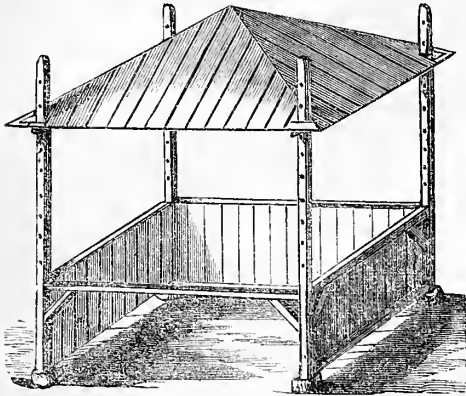


Fig. 1.—STRAW OR HAY-BARRACK.

fields, which also save time in hauling the crops at the busy season. Although stacking is a very cheap method of securing crops, yet in a climate of frequent heavy rains, it is rarely that a stack can be made weatherproof, unless it is so carefully thatched with straw as to cost nearly as much as a fair kind of barrack. Having recently had occasion to build several barracks upon different parts of his farm, the writer gives the following description of two of them: one, partly enclosed, to serve as a tool-house, or shelter for cattle; and an open one. The former is shown at figure 1. There are sills upon three sides, the front being open. The posts are set 16 feet apart, and are mortised into the sills. Girts

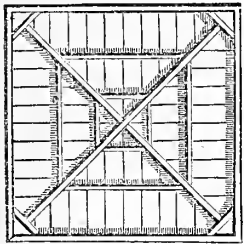


Fig. 2.—FRAME OF ROOF.

are set 7 feet above the sills, with braces, to stiffen the structure. The roof, of which figure 2 is a plan of the inside frame, slopes to each side, and is built of 2-inch boards upon 2x4 timber, braced by two sets of cross-ties, as shown. The corners

are left open, to allow the posts to pass through. Holes are made in the posts about a foot apart, into which iron pins are inserted to sustain the roof. The barrack is enclosed to the girth, giving 7 feet clear over the sills, and providing room which may be used as a stable or shed, by placing poles or timbers upon the cross-girts, to support the hay, grain, or fodder. The list of materials for this structure is as follows:

3 chestnut or oak sills,	8x8,	16 feet.
4 posts,	6x6,	16 "
8 pieces,	4x4,	16 "
3 "	hemlock,	2x4,
		16 "
280 feet roof boards,		
350 feet of boards,		

The cost of these items, with 4 one-inch iron bolts 18 inches long, and 5 lbs. of nails, can be readily figured up. The labor of putting up is worth about \$5. The whole cost will range from \$25 to \$40, according to the price of lumber.

Coops for Chickens.

Dry and clean shelter is absolutely necessary for the health of young chicks, and the mother must be confined lest she wander too far or exercise her mischievous propensity for scratching, where

scratching is not in place. A plentiful supply of good roomy coops should be on hand for use at this season; or they may be made at once, if not already prepared. The most important requisites are perfect cleanliness and freedom from dampness: if these are secured, it matters very little about the size or shape of the coops; yet convenience as to handling of the inmates, or for protecting them against sudden storms or vermin, is desirable. The floor is an important consideration; it should be movable, and elevated above the ground. A useful arrangement is shown at figure 1. There are two cross pieces of 2 x 3 timber, to which boards are nailed, leaving half the cross pieces uncovered, so that the coop resting with its edge on these may be placed entirely over the floor, in which case no water will enter from the heaviest shower. The floor is thus all inside the coop, and is raised one inch above its bottom. The coop should be 2 feet square, and may thus be made of boards 12 inches wide and 2 feet long, without waste. Some coops, which we have made of half-inch matched lining stuff, are found very light, warm and comfortable. The form is a matter of fancy, but time and labor is saved by having all of the same pattern, as then the materials for several can be cut up at once, and put together afterwards. In this way we have been able to build 10 coops in two days. The shelter-board, shown at figure 2, is hinged to the coop by a few hoops of wire, and in fine weather may be turned back or removed. At

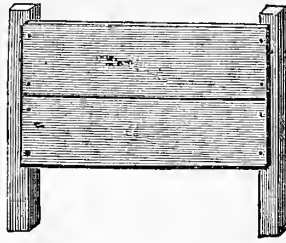


Fig. 1.—FLOOR OF COOP.

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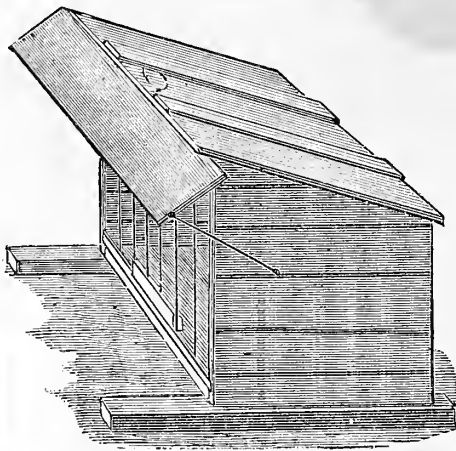


Fig. 2.—COOP COMPLETED, WITH SHELTER BOARD.

figure 3 is shown a different style, which, though a little more trouble to make, when neatly finished and painted, will be found better adapted for use on lawns or conspicuous places. The front may be made of wires, laths, or turned rods of wood, and so arranged as to have a door sliding up and down. A shelter-board should be provided; and for all sorts of coops, a feeding-board should be placed in front to keep the food clean. A double coop, with an enclosed run, is shown at figure 4. This is furnished with handles, by which it may be lifted and carried from place to place; it may also be provided with movable floors, as previously described. A neat coop with young chickens are rather pretty in a well kept yard or lawn, and places valuable birds within control.

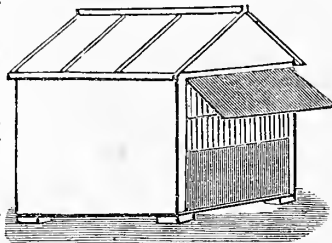


Fig. 3.—FOR THE LAWN OR YARD.

Is Cheese or Butter the Most Profitable?

The dairy-business is not, just now, in the most flourishing condition. Butter is low in price, and the question is raised if it would not be more profitable for dairymen to turn more generally to cheese-making. Butter is a perishable product; as soon as made, it begins to deteriorate, unless of that small class which is not an ordinary market-product. At the average of 30 lbs. of milk for one pound of butter, the ordinary butter-maker realizes but 2 cents for 3 lbs. of milk. On the other hand, the cheese-maker is paid from one cent to one and a quarter cents a pound for his milk, at the present prices. Besides, cheese is not a perishable article, and need not be sacrificed on a poor market, nor sold when the market is glutted. It is undeniable that the cheese-maker is better off to-day than the butter-maker, and has a large difference in his favor, both in price and convenience of handling. The cheese-maker can also churn a part of his cream, and manufacture the partly skimmed milk into a "half-skim" cheese, which, when well made, is readily marketable at a price little less than whole-milk cheese. Under present conditions the butter-maker, unless he produces a "gilt-edge" article, is

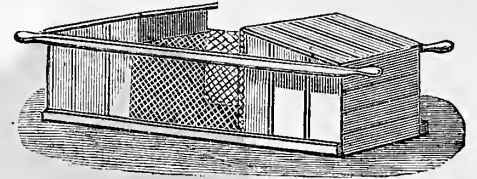


Fig. 4.—A DOUBLE COOP.

under a cloud, especially if he hails from the East. The Western dairyman has an advantage over him, and can afford to give him large odds, and then win. Western dairy goods now carry no taint with their name; they are excellent in quality, have a high reputation, and their merits sell them. They are produced more cheaply than the Eastern article, so that Western creamery butter, fresh from the churn, drives out the Eastern farm dairy product, made at larger cost on higher priced land, and with more expensive labor. The remedy for the Eastern men may be a resort to cheese-making, until butter recovers a proper relative value. Milk is selling very low in the large cities, and only near-by dairies can afford to keep in the business. Those distant from markets are being driven to the creameries for a profitable outlet for their product. This is unavoidable; and many milk-farmers and butter dairymen will follow the example. One caution is needed: This is a season of low prices and small pay for labor; it is indeed "a day of small things." If, however, quality is sacrificed, the present low level will sink yet deeper. To raise the quality of our product now is to save and secure our market; and it will be entirely safe to avoid the skim-milk cheese-manufacture, in trying to get something from both butter and cheese. Fine cheese will keep until the season is closed, and will then sell at advancing prices, because prices advance when stocks are diminishing and no cheese is making. In avoiding loss by making cheese, however, care must be taken not to invite loss by making unsalable goods.

Marking Chickens.

Poultry fanciers find it desirable to be able to identify the different broods of chicks. To do this, a method of marking is necessary. The best permanent mark is one made upon the web of the foot; and the most convenient one is a small hole, made with a punch, in the manner shown in the accompanying illustration. The punch is a sharp steel instrument, and is used by pressing it upon the web between the toes as the foot is held upon a piece of hard-wood, and giving it a twisting

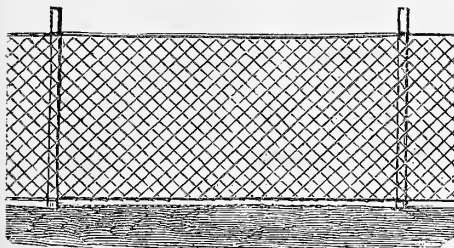


THE FEET MARKED.

motion. The small piece is cut out, and the hole never closes. There is no pain or inconvenience exhibited by the chick, and it is a much more desirable mark than to clip off the toe, as is often done to the disfigurement of the bird. For this hint we are indebted to Mr. H. H. Stoddard, of Hartford, Conn.

Netting for Poultry-Yards.

The evident value and convenience of a light netting to confine poultry temporarily, or to protect gardens from the fowls, has given occasion for frequent inquiries as to where it could be purchased, and how it might be used. Heretofore it has been difficult to procure the nets, and we have been obliged, consequently, to refrain from mentioning



A FENCE OF NETTING.

their usefulness. Now, however, they can be obtained without trouble. The nets are made of twine, of different widths, from quite narrow up to 10 feet, and of any desired length. For confining poultry, the width needed will depend upon the kind of fowls. The large breeds can be kept within bounds by a net 3 feet high, while the smaller ones—Leghorns, Hamburgs, etc.—will require a width of 8 or 10 feet. To support the nets, a thin fence-wire is run through the top meshes, and this is fastened to light stakes, as shown in the illustration. The bottom of the net may be tied to the stakes by small twine. The stakes may be planted 100 feet apart if desired, if the wire is fastened at the ends to firmly set posts. The wire may be attached to the stakes by small hooks, or by pieces of tarred twine. Stronger nets are used in a similar manner for confining sheep in pastures, or when foddered upon green crops. As the wind has very little effect upon these nets, it is not necessary even for high netting to use any but light stakes; which may be planted in the same manner as is usual for tall bean-poles; that is, by making the holes with a bar, and pressing the pointed stakes into the ground by hand.

Root-Pruning Tillage

The benefits of cultivation are well known, but the explanation of the reasons for the effects are not so generally understood. Stirring of the soil that it may absorb moisture, and weed-killing, are held by the majority to be the reasons for cultivation. The killing of weeds, that they may not choke the crop, and that the right plants may have the benefit of all the fertility of the soil, is an essential feature of crop raising; but if that and the absorption of moisture were the only good results derived, then we had better sell our horse and hand-hoes, and save our labor. What good farmer has not observed that cultivation in wet weather, when the soil was thoroughly moist, was remarkable for its effect on the crop, sending it forward with wonderful rapidity? The hoeing of cabbages at such times is the most common, and very beneficial. But, according to the old view of the matter, if the theory was correct, hoeing when the soil is dry would have the best effect. Then there must be something wrong with the old idea.

Dr. Sturtevant, of Massachusetts, an able experimenter and thinker, tells us that there are two other reasons for the tillage of a growing crop, or "interculture," as he terms it. We all know that a mulch of fine straw, sawdust, or even of sand, will keep the soil moist, and often save a strawberry or other crop, or keep a newly-set plant from dry-

ing up. The action of the mulch is not to absorb moisture from the atmosphere, but rather to prevent evaporation from the soil; which evaporation means the passing off into the air of the soil moisture, and the consequent drying up of the earth. The mulch acts as a barrier to and preventative of evaporation, much as a woollen garment prevents the escape of heat from the body. As the woollen is a poor conductor of heat, so the mulch is a bad conductor of moisture.

Now the stirring of the dry soil breaks up the communication between the surface and the moist earth beneath, making in effect a *mulch* of the layer of light, dry soil; thus benefiting the crop in a drouth by preventing the escape of moisture, and *keeping* what is in the ground, rather than *absorbing* water from the air by day, or gathering the dews at night. The small amount of dew condensed and absorbed by the soil is easily realized by stirring what was dry earth the day before, on the morning after a heavy dew, and observing how little it is moistened, not deep enough to reach the roots.

So much for shallow cultivation. Let us see what Dr. Sturtevant says about deeper work. In hoeing or cultivating we must necessarily cut numerous roots. Where a vigorous growing root is cut, several new roots immediately start forth, thus multiplying the feeding power of the plant. In wet weather hoeing of cabbages, the conditions are entirely favorable for the sprouting of new roots; which doubtless explains why hoeing at that time is so beneficial. It is a not uncommon practice to dig around a tree which is spending most of its energies in producing wood and foliage; the result of which digging is to cut off a large number of its roots, stopping its growth for a time, and allowing it to mature, and changing its energies from wood and foliage to fruit production. Why not apply the same process to corn, wheat, and other crops? We do. And we have been root-pruning ever since our fathers began to handle a hoe or run a cultivator; but we didn't know it. We were waiting for Dr. Sturtevant to tell us what we were doing. Cutting the roots checks the growth for a time, and allows the plant to mature; and as soon as a root is severed, several small roots start out where but one grew before, and so many more feeders are given the plant; and since the checking of the growth turns the energies of the plant to using its already stored up nutriment in fruit production, when the new feeders begin to work they contribute directly to the same end.

A plant or an animal often develops to excess in one direction, to the detriment of other parts: as a cow to beef, with little milk; or a plant to foliage, with little fruit. As Goethe expressed it, "In order to spend on one side, nature is forced to economize on the other side." Plants grown on a too fertile soil often develop a large expanse of leaf, with but few flowers and little fruit. To turn this rampant growth in the direction of fruit and profit, we must change its course. We do this by checking the growth by "root-pruning;" thus directing the energies of the plant to seed and fruit production. This is the work of *deep* cultivation.

In cultivating corn, Dr. Sturtevant, to root-prune, runs a *deep-cutting, sharp-toothed*, cultivator, three times through the rows, beginning when the leaves reach knee-high, and *stopping* when the blooms appear, or when the tassels show themselves, it being too much for the plant to cut their roots much after that period. This deep cultivation, too, or "root-pruning," will only be found advantageous on a rich soil either naturally fertile, or made so by artificial applications, as the conditions we wish to change are only present thereon, that is, excessive leaf growth to be changed to seed production. Herein, too, lies another argument for high manuring, as the more we fertilize, the more profitable will be our cultivation.

Shallow interculture is beneficial as often as one can afford to do it, say once a week or less often. Drilling and hoeing of wheat is based on these same principles. Now, knowing *why* we cultivate, we should be able to practice "interculture" to the greater advantage of the crops, and our profit.

A Cheap Suspension Bridge.

In many places where short foot bridges may be required over small streams, they may be very cheaply constructed of fence wire, with narrow foot boards, in the manner shown in the accompanying illustrations. The supports for the wires are made by fixing a timber firmly to posts set in the ground. Five or six fence wires, No. 9 or 10 gauge, are stretched across the stream, and the ends fastened securely to the timbers. Hand wires are stretched from side to side, and fastened to



Fig. 1.—WIRE SUSPENSION BRIDGE.

posts or stakes, being carried over their tops, by which they are raised to the proper height. This is shown at figure 1. The foot boards are fastened to the wires by staples, figure 2. It is not advisable to stretch the wires too tightly, as when the tension is very great a sudden jar may snap the wire; they should be left at a quite perceptible curve. The lower outside may be connected with the upper wires, by short ones placed a few feet apart.

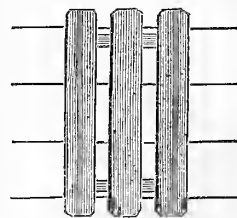


Fig. 2. FLOOR OF BRIDGE.

Portable Fences.

Light portable fences are often of great convenience for dividing farms, in place of permanent ones, which are generally an obstacle to clean culture, very expensive, and several of which would be required, where one portable fence might serve the same purpose. Of the great variety in use, the two here described will be found cheap, easily made, and useful. That shown at figure 1 is constructed in panels 14 feet long and 4 feet high, and made of

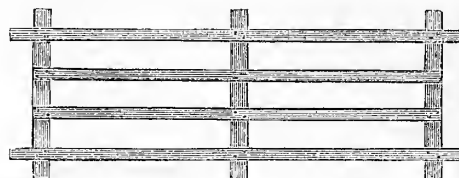


Fig. 1.—PANEL OF PORTABLE FENCE.

three upright bars 4 feet long and 6 inches wide. To construct a section, lay the uprights upon a smooth floor, level ground, or pieces of timber, in their proper positions; then nail to them, lengthwise, strips of common fencing stuff (6 inches wide), using wrought nails, which should be well clinched. The panels are supported by stakes on one or both sides, as may be necessary, to which they are fastened by wires or pieces of tarred cord.

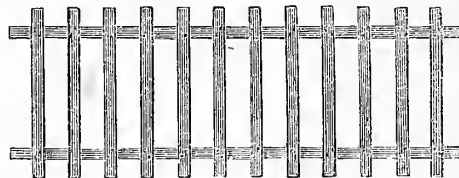


Fig. 2.—PORTABLE FENCE OF PICKETS.

The bottom strip is nailed 5 inches from the ends of the uprights, so as to raise it that distance from the ground. The spaces between the boards are 5, 6, and 8 inches. Another method is shown at figure 2. Strips 14 feet long are provided, and pickets, or short pieces of waste-board, or split timber, are nailed to them, as in the cut. The panels are fastened together by the ends of the level strips, and are supported by stakes driven in the ground. A very

useful and handsome fence may be made of light poles, either split, or flattened with an ax where the uprights cross the horizontals; using wrought nails.

Sawing Timber.

A recent article, descriptive of the method of sawing timber with whip saws, has brought several enquiries for a simpler method which shall not require so much preparation. We give a plan in the illustration upon this page of the simplest manner of arranging the saw-pit. A bank of such a shape as indicated, or a pit excavated in the ground of a similar shape, will be required. A horse, or trellis, of stout timber, is constructed as shown, upon which the log is rolled, with one end remaining upon the bank, and thus sawn; being moved as may be required. When one-half is sawn through, the log is rolled on to the bank, and is swung around so as to bring the other end on to the horse, when the sawing is completed. It is better to have two horses, so that one can be moved as will be found necessary from time to time.

Effect of Fertilizers on the Grape.

That bones and similar manurial substances placed under grape-vines have a decidedly beneficial effect on the fruit, is well known. The experiments of Professor Goessmann, at the Mass. Agricultural College, and others, for the last few years have shown that certain chemical fertilizers have a marked influence in developing particular characteristics of fruit. Previous improvements in plants have been almost altogether by means of crossing varieties, by selection and cultivation: the food of the plant having been seemingly unthought of, save in a general way, beyond the accepted fact that fertility was necessary. What "fertility" means is but a vague idea to nearly every farmer or fruit grower; that it signifies the quality of fruit, as well as amount and size, is seldom realized. But such is the fact, provided the "fertility" consists in the proper constituents of plant-food. How important it is, then, that we pay more attention to the question of fertilizers, when small fruit or large fruit, fine flavor or poor flavor, pulpy fruit or fruit with the melting quality, fruit which will keep or that which will soon decay, freedom from disease or mildew—when these differences, the differences between success and failure, may be largely influenced, perhaps controlled, by the kind of food supplied at the roots. That there is an actual difference in the composition of fruit under different circumstances is shown by the following table of analyses by Dr. Goessmann, of the Concord grape, and of the purple, wild variety of the same species (*Vitis Labrusca*); the parent of the Concord:

CONCORD GRAPE. (Not Fertilized.)		Percentage of dry matter at 100°-110° Centigrade.	Percentage of grape-sugar in the juice.	Percentage of sugar in solid dry matter.	Cubic centimeters of soda solution required to neutralize the acid in 100 parts juice.
Date Gathered.	1876.				
July 17.....	8.30	0.645	7.77		
" 20.....	8.10	0.625	7.72		216
Aug. 2.....	9.94	0.933	9.44		249
" 16.....	10.88	2.000	18.33		229
" 30.....	15.53	8.62	55.33		120
Sept. 13.....	17.43	13.89	79.46		55
" 4.....	19.82	16.13	81.38		49.2
PURPLE WILD GRAPE.		Percentage of dry matter at 100°-110° Centigrade.	Percentage of grape-sugar in the juice.	Percentage of sugar in solid dry matter.	Cubic centimeters of soda solution required to neutralize the acid in 100 parts juice.
Date Gathered.	1876.				
July 19.....	9.00	0.714	7.93		204
Aug. 4.....	12.25	1.10	8.93		249
" 16.....	12.48	2.00	16.03		233
" 30.....	16.58	6.50	39.81		147.6

The figures in the last column indicate the free acids in the juice. The difference in the proportion of sugar at different dates, of fruit from the same vine, and between the wild and cultivated varieties, is quite marked; a fact very well known to those who eat Concord, and try to eat the wild ones. This variation in the amount of sugar also means a variation in acids and other constituents, and these several variations cause all the difference in flavor, texture, and in keeping quality. Yet these characteristics can all be influenced by means of fertilizers which act upon the development of the sugar of the fruit. The effects of cultivation

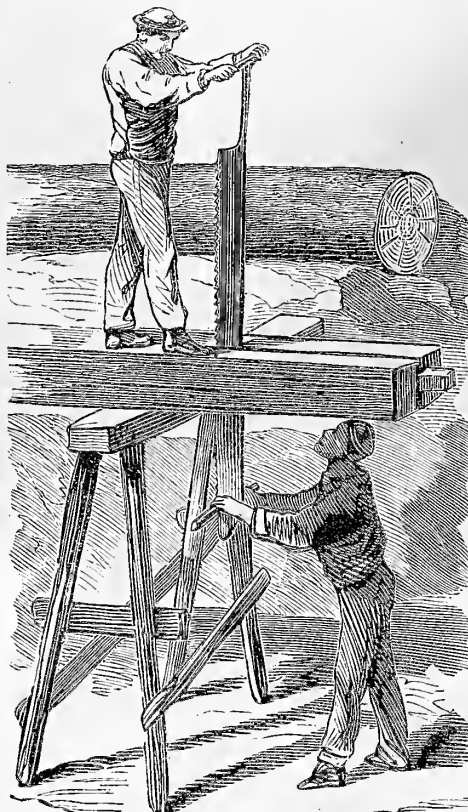
and fertilization on the composition of some wild varieties of grapes are shown in the following experiment. The fertilizer used in this case was composed, per acre, of 180 lbs. nitrate potash, and 450 lbs. of superphosphate, containing 12 per cent soluble phosphoric acid:

- (a) Berries of Wild White Grape, without stems, collected on the 20th of September, 1877. (Dead ripe.)
 (b) Berries of White Wild Grape, without stems, from College vineyard, treated with fertilizer No. 1. Collected 20th of September, 1877. (Dead ripe.)
 (c) Berries, without stems, of Wild Purple Grape, collected 20th of September, 1877. (Dead ripe.)
 (d) Berries, without stems, of Wild Purple Grape, treated with the above stated fertilizer. Collected 20th of September, 1877. (Dead ripe.)

	Moisture lost, at 100°-110° Centigrade.	Percentage of dry matter at 100°-110° Centigrade.	Percentage of grape-sugar in the juice.	Percentage of sugar in solid dry matter.	Cubic centimeters of soda solution required to neutralize the acid in 100 parts juice.
(a)	79.98	20.02	10	49.95	130
(b)	78.35	21.65	14.29	65	65
(c)	73.31	16.69	8.22	49.25	104
(d)	80.45	19.55	13.67	60.92	121.6

These analyses show very decidedly the influence of mere cultivation on wild varieties, making a difference of nearly 20 per cent of sugar. Further investigations in this direction are in progress.

It has been found, by Dr. Jahes Fisher, an unusually successful grape-grower, that animal ma-



SAWING TIMBER—ANOTHER METHOD.

nures make strong vines, but not much fruit, and tend to induce rot and mildew; while potash and superphosphate had quite the opposite effect, producing a large amount of fruit, of superior quality. Mr. Anger, the State Pomologist of Connecticut, is trying similar experiments, as well as several others, in conjunction with Dr. Goessmann, and with remarkably like results in each case.

Increased Rainfall in the West.

As might have been anticipated, the rainfall in the far Western States, formerly hardly adequate for the purposes of cultivation, has considerably increased since the occupation of the country, and the cultivation of the prairies. Heretofore every condition has been unfavorable to the retention of the water in the soil. The surface, beaten hard, and covered with an impenetrable sod, could not absorb the rain water, which soon found its way into the water courses and streams, leaving little

moisture in the soil to temper the aridity of the atmosphere. The winds were dry and thirsty, and sucked up the water left in pools and swales with great rapidity. But as soon as the tough sod has been plowed, and the soil been mellowed and made absorbent, the rain soaks into the ground instead of flowing off, and percolating through the subsoil, supplies springs, which break out in low spots and furnish water for new rills and brooks. The atmosphere is no longer parched, but becomes moist, and its former extreme variations of temperature do not occur. The climate changes, and the moisture of the air, and the consequent rainfall, are increased. A new circulation is established, and the storms and showers are those of a temperate instead of a torrid zone. Facts have shown that these conclusions are correct, and the observations taken in many places near the 100th meridian, and eastward to the Missouri River, indicate a greatly increased rainfall, the increase amounting in many cases to several inches a year. Farmers no longer fear disastrous drouths, and there are few localities, where their business is safer, than in the locality referred to.

Irrigation in Colorado.

A practically rainless district, the agriculture of Colorado is necessarily carried on by irrigation. This has been hitherto a little understood art in the United States, but recently it has been practised with such success, that it is rapidly extending through the arid parts of the country. The literature of irrigation too, has made a beginning with us and its principles set forth for those who would practice it.* By and by we shall know more through the experience of irrigators, and the skill of hydraulic engineers; and it will become widely used as an indispensable means of cultivation itself, as well as an accessory to ordinary methods. The example of Colorado is very instructive and encouraging. This now populous and prosperous State, was settled by a handful of enthusiastic, but shrewd men, who took their fortunes as it were in their hands and launched upon an unknown enterprise. Had they known the history of this art of irrigation, and the extent to which it has been and is now used in other countries, there would have been less doubt about their venture. As it is they have made a grand success of what they did not know could hardly have failed with proper methods, but the credit is none the less for them. At first it was doubted if Colorado could sustain its farmers. Now it not only sustains a large population engaged in varied industries, but exports much of its products eastward. As the capacity of the streams is better understood, and as economical methods of using the water are learned, the breadth of land under irrigation is rapidly widening. Nearly a million acres of land is expected to be brought under cultivation the coming season, and new canals are begun and proposed. Hitherto the prices of produce have valued high, which has tended to encourage the enterprise. As production increases, prices are falling, but this will act in favor of the development of the mining, manufacturing, and stock interests, which in turn will enlarge the outlet for farm produce, and stimulate agriculture.

TOBACCO.—The late unpleasantness experienced by tobacco growers, has given place to a more satisfactory condition of things. The last crop of "seed-leaf" has been of unusually good quality, which has had the effect of stimulating buyers as well as prices. Dealers are feeling elated at their position, and are looking for an early resumption of activity in business. This warrants an easier feeling amongst producers; and the prospects are fair for a gradual return to the cultivation of this crop. While tobacco is not exactly a staple farm crop, yet there are numerous cases in which a farmer, who has prepared himself at a large outlay to grow it, may reasonably manage his farming operations so as to look for his money income from this source, in preference to any other.

* "Irrigation for the Farm, Garden, and Orchard," published by the Orange Judd Co., New York, price, \$1.50.

The Canada Violet (*Viola Canadensis*).

The few of our native species of Violet which have any perfume, possess it in so slight a degree, that we cannot commend any of them for cultivation for this quality alone. If we look for perfume, we must take some variety of the European Violet (*Viola odorata*), and accept our own for the beauty of their flowers only. In former volumes we have figured the beautiful Birds-foot Violet (*Viola pedata*), beautiful in its ordinary form, and especially so in its white and two-colored varieties; these plants, notwithstanding their lack of odor, are, on account of the abundance, large size, and long duration of

stem or two, and all we can hope to do, is to show the shape of the leaves and flowers, and give an idea of the details of the plant. It forms a dense mass of such stems as these, from a foot to two feet high, and produces a great profusion of flowers, which last a long time. The flowers are mostly white on the inside, the side-petals bearded, and the upper ones tinged with purple on the outer surface. Some variations from the usual form have been noticed, and it is very likely that careful observers will find that this is quite as much disposed to sport, as are the other species. Our California friends will find in their rocky woods, a species which is much like the Canada Violet. Indeed, when we first came

those who do not know *Kerria*, one in making his selection passes this by, and the nurseryman concludes that there is no demand for good things. It is a fact, and we may as well accept it, that people in general do not take to botanical names. However unreasonable this may be, and however we may show that some botanical names, such as *Magnolia*, *Geranium*, and others, are in common use, the fact remains that if we would popularize a plant, we must give it—unless its botanical name happens to be one like *Coleus*, which every one can remember—a name that will take. For this reason, in calling attention to a useful and showy Japanese shrub, *Rhodotypos*, we have been at some pains



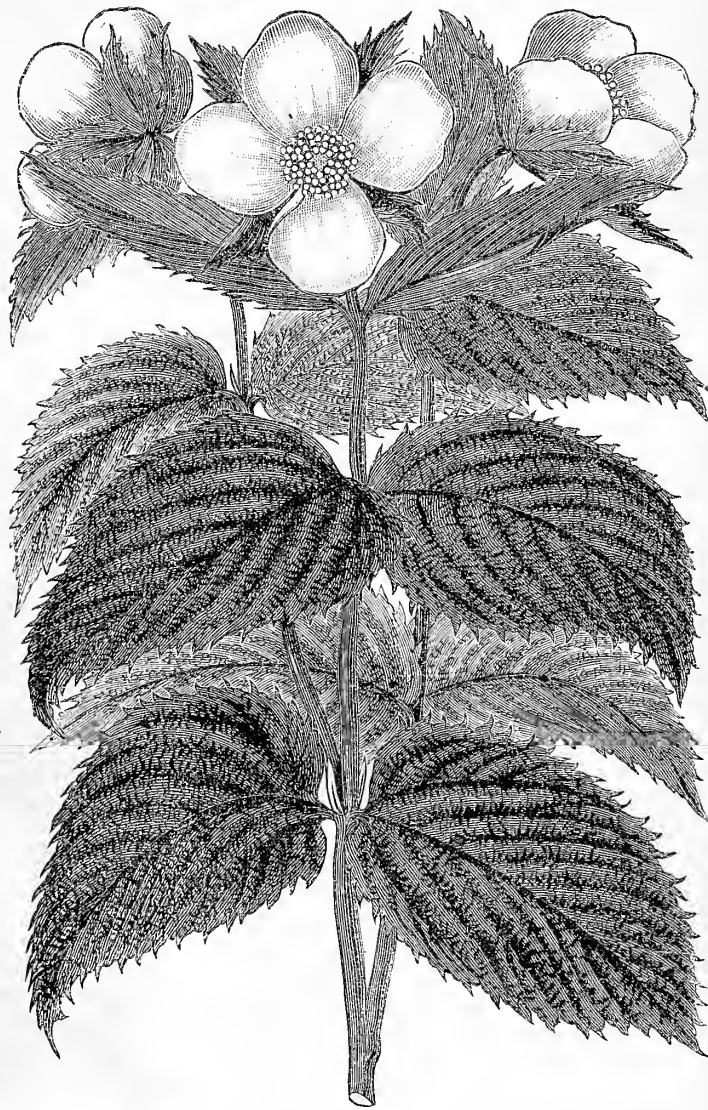
CANADA VIOLET—(*Viola Canadensis*.)

their flowers, in much esteem among European gardeners. Some of the forms of our commonest Blue, or Hooded Violet (*V. cucullata*), some of which have pure white, and others variously blotched flowers, are finding their way into cultivation. During the past season we have had several forms of this sent for a name, showing that it has obtained a foothold in various gardens. The two native violets we have named, the Birds-foot, and Hooded (the names referring to the form of the leaf), belong to the section of stemless violets; i. e., their leaves and flower-stalks all come directly out of the ground, having their origin from a subterranean stem. Besides these, we have a set of native violets with branching stems, and of these perhaps the most conspicuous is that, which Linnaeus called *Viola Canadensis*, the Canada Violet, but which is by no means confined to Canada, as it is found in all the Northern States, and southward along the Alleghany Mountains. It is a native species more frequently found in cultivation in Europe than with us, yet we are sure that any one who saw it in masses, as it grew in our rock-work this spring, would admit that it was well worthy of cultivation. In giving an engraving, we are confined to a single

upon it in that rich botanical region, around the mines of New Almaden, we hailed it as our old New England friend, but a closer inspection showed it to be the Western representative of our species, the Eyed-Violet (*Viola ocellata*) of Torrey and Gray, so called because each of the side-petals has a little purple spot or "eye" near its base. A very neat species it is, and we advise the many lovers of flowers on the Pacific coast to introduce it into their gardens, which they can readily do, when the dry summer puts this, as it does their other lovely spring flowers to rest, and the roots are dormant.

New Japanese Shrubs—The Jamabuki.

Japan has greatly enriched our collections of hardy shrubs and herbaceous plants, and while a number of the shrubs from that country are well known and popular, we find that others, equally meritorious, are seldom seen in cultivation. If one takes up a catalogue, and finds "*Rhodotypos kerrioides*, a fine shrub from Japan, with the habit of *Kerria*, but large white flowers," as there is nothing in the announcement to attract the attention of



JAMABUKI—(*Rhodotypos kerrioides*.)

to hunt up its native name, and give our readers the choice between the botanical *Rhodotypos*, meaning "rose-form," and the native Japanese name *Jamabuki*. There is but one species of *Rhodotypos* thus far known, and it has been named *kerrioides*, from the marked resemblance of the foliage of the shrub to that of *Kerria Japonica*, the old "Japan Globe Flower" of our gardens, which makes itself almost a weed, and which is still known in some catalogues by the incorrect name of *Corchorus*. The "*Jamabuki*," or *Rhodotypos*, is a perfectly hardy shrub, flowering in April, its foliage being so much like that of *Kerria*, as to warrant its name; but the flowers, instead of the deep yellow of *Kerria*, and their flimsy texture, are of the purest white, and much larger and firmer. The engraving gives flowers and leaves of the natural size. The plant belongs to the Rose Family, and, unlike most of the showy members of that, it has but four petals, the usual number being five. The fruit consists of (usually) four little stone fruits, like the grains of a blackberry, and according to Siebold and Zuccarini, who first described it, become of a brilliant black color, and remain so until the middle of winter. We have had the plant in cultivation for sev-

eral years, and find it one of those easy-growing things that has every element of popularity. It is not particular about soils, does not get so rampant as to need much sheeking, forms a shapely bush, which in early spring shows an abundance of pure white flowers, which last a reasonable time. It is equally deserving of a place in the shrubbery with the Weigelas, which are now deservedly popular.

The Oleander Poisonous.

The different varieties of the Oleander (*Nerium Oleander*), so popular as house plants in cool climates, are in warm countries often cultivated as ornamental trees, and used as hedge plants. The tree, in a suitable climate, will reach the height of 20 to 30 feet, and forms a most beautiful object, both in its leaves and flowers. But with all its attractiveness, it has the misfortune to be highly poisonous, a quality not so likely to be manifested when grown as a house plant, but one which becomes of serious importance when it is in common cultivation in the open grounds. Some months ago, one of our correspondents in Bermuda, where Oleander hedges are very common, wrote to ask if the tree could poison the herbage around it, as he had found animals that grazed near the Oleander hedge were frequently made seriously ill—a trouble which might be readily caused by a few fallen leaves. Later accounts come from another British colony, New South Wales, of the death of six cows at Sydney; the animals were fed upon grass recently cut from a lawn on which the Oleander grew, and its leaves became mingled with the fodder.

It is quite likely that the poisonous principle is more active in climates which will allow the plant to grow continuously in the open air; still, while we do not remember to have heard any casualty from house plants, it is well to know of the danger and be on guard against it. St. Louis, Mo., may almost be called the City of Oleanders; such is their abundance, that it would seem that every house has one or more bushes, and the markets are gay with them. We should expect accidents here, if any where, from the plant. A case is recorded in Europe, in which fatal results followed eating meat in which a skewer of Oleander wood had been used.

Dwarf Pear Culture.

We were recently in the pear-orchard of one of our most distinguished pomologists, who had put out some eight hundred trees of all the well-tested varieties, as well as those that promised well. The ground had been most thoroughly prepared, cleared of stones, trenched, and enriched with stable and other manures. A large portion of the trees were dwarfs, cultivated in rows, with ample space between for vegetables. The ground was annually manured, and kept in the highest cultivation. Great pains were taken to train the limbs of the dwarfs very low, to shorten in the annual growth, and by thinning the fruit to restrict the bearing to the production of limited crops of the very finest specimens. It must be said in justice to the experiment, which extended over some twenty years, that while the proprietor lived, and gave his personal attention to the dwarfs, the most of the varieties flourished and gave fair crops, though they could hardly be called remunerative, when compared with the products of his standard trees. Since the death of the proprietor, which occurred some two years ago, they have missed his supervision and the care also of a competent gardener. The rows of dwarfs are sadly thinned, many of them having been cut down as unprofitable, and the spaces between are covered with a wonderful growth of clover. In our own garden we have three dwarf-pears—two Bartlett's and a Muskingum, the planting of a former occupant. They bear a limited quantity of good fruit every season, but they do not compare favorably with the yield of standards planted at the same time, and sharing the same treatment. We have three trees contiguous in the same row, a dwarf Bartlett, a dwarf Muskingum, and a standard Viear of Winkfield between the two.

From the Viear last fall we gathered a barrel of pears, and not to exceed a half bushel from either of the others. This is about the average yield of the dwarfs, and less than the average of the standard.

For market purposes we doubt if the dwarfs can be made to pay. They are desirable in small gardens, where one is anxious to eat fruit of his own growing at the earliest date after planting. The desirable varieties that do well upon the quince are quite limited. Belle Luerative, Duchesse d'Angouleme, and Louise Bonne de Jersey, are among the best in most soils. Then come St. Michael, Lawrence, Comice, Beurre Diel, Beurre Bose, and Doyenne d'Ete, which succeed fairly with generous culture. The dwarfs require a richer soil and more attention than standards. Some varieties yield finer specimens upon quince than upon the pear-stock. The dwarfs are properly regarded as the pets of small gardens, on which amateurs in narrow quarters may bestow their husbandry. CONNECTICUT.

[Our correspondent's notions as to the market-value of dwarf pear trees—that with few exceptions, and these annually growing fewer, they are not advisable, are well expressed by an old Dutch market-gardener in our neighborhood. He says: "You plant a dwarf pear tree, and you can go for your crop with a basket; plant a standard, and you must take a wheelbarrow and a barrel.—ED.]

The Thick-leaved Elm.

In January last, we gave an engraving of a twig of the Thick-leaved Elm (*Ulmus crassifolia*), with notes from our own observations of the tree, and asked for further information concerning its value from those living in its native localities. We are favored by a letter from E. H. Smith, M. D., of Victoria Co., Tex., from which we abstract the following: "This tree is abundant on the Colorado [of Texas, Ed.] and on all the streams west, to and including the Rio Grande, and also on their tributaries. In our rich river valleys, its average diameter is 20 inches, while on high dividing ridges, and at the head of small streams, its diameter ranges from two to ten inches. This difference in size is accounted for by its capacity for enduring extremes of dryness and moisture. The tree makes no approach to an evergreen, its leaves being dropped on the first advent of cold. For a dense shade, where it is not crowded by other trees, it is unequalled, and I think it would prove hardy in almost all parts of the United States. The wood makes a good fuel, and it is often made into rails and shingles; rails of this wood last only about five or six years, but I have known a roof shingled with this Elm to be good for more than ten years." Dr. Smith will please accept our thanks for his note.

Fighting the Canker-worm too Late.

A correspondent writes: "The canker-worms have made their appearance in great numbers in Eastern New England, even upon trees that were tarred during March and April. This does not prove that the application of tar is not a successful remedy. The open winter, which admitted of plowing in January in some places, also favored the ascent of the moths. In severe winters, there is probably no ascent of the moths until spring. Harris says: 'It was formerly supposed that the canker-worm moths came out of the ground only in the spring. It is now known that many of them rise in the autumn, and in the early part of winter. In mild and open winters, I have seen them in every month from October to March. They begin to make their appearance after the first hard frosts in the autumn, usually toward the end of October, and they continue to come forth, in greater or smaller numbers, according to the mildness or severity of the weather, after the frosts have begun. Their general time of rising is in the spring, beginning about the middle of March in the latitude of Massachusetts, and they continue to come forth for about three weeks.'

"No farmer who beholds the melancholy aspect of his orchard this summer, riddled by the canker-

worm, should infer that the case is hopeless. The tar should be applied always on paper or cloth—never directly on the bark—as early as the 1st of November, and it should be renewed daily as long as the insects continue to rise. This can be known by the capture of the female moths in the tar. While the ground remains frozen upon the surface, there can be no danger from the insects, and, of course, no need of the application. In the latitude of New York City, there will not be more than 60 days that the tar will be needed. This remedy is effectual, and it is only expensive in labor."

Notes from the Pines.

Those who have been so enthusiastic over the early spring, had abundant reason to change their note about May 12th. I say about that date, as a wide-spread frost from the far West to the far East occurred, either two or three days before or after that time. Many, trusting to the early promise, and forgetting the lessons of former very early springs, had prepared themselves for disappointment, and as I went to and from the city in the cars, the losses in Tomatoes, Lima Beans, Corn, and other crops, seemed to form the chief topic of conversation. Our chief loss was

Among the Grape-Vines.

These we could not well retard if we would, and the succulent shoots had pushed just far enough to expose the whole "set" of buds for the crop—and a most promising set it was—to the action of the frost. The vineyard presented a sorry sight when a few succeeding warm days had quite dried the shoots and leaves that the frost had killed. Yet, on going over the vines, I find probably a fourth of the clusters of buds unharmed, and it is likely, if we can manage the rose-bugs, that we shall still have some grapes. In many cases the shoots were killed back, but not quite far enough to reach the clusters; in these cases I allow the uppermost sound "lateral" to grow, and that will furnish enough foliage to perfect the fruit. Still the evil was not without its compensations. Some vines had from one cause and another got out of training, and these were cut back

For a New Start,

throwing the whole energies of a vine several years old into growing two arms for another year. Another benefit. I had working with me a pupil who had been studying vine structure and growth, and as in this case each vine had to be treated according to its present condition, and what was expected of it in future, he volunteered the opinion that "an hour of this experience is worth more than all the books."... There is much talk of the

Injury to Strawberries

by the frost, but so far as ours go, and some of them are on rather low land, where the frost was most severe, I find but little damage. The Strawberry is a fairly hardy plant, and while no doubt those flowers that happened to be in full bloom just at that time were blighted, and will fail to perfect fruit, enough will escape to give a good crop. The fact that the flowers of the Strawberry come on in succession, and but a few of the whole number are in full flower at once, has no doubt saved them. As to Strawberries—last spring Messrs. E. & J. C. Williams, of Montclair, N. J., sent me a dozen plants of their new variety,

The "Duncan" Strawberry.

These were put out where they might multiply, but being at the end of a row grown for fruit, from which the runners were kept off, the man who was to cut the runners from the old plants, also kept the Duncans clear of them, and I had this spring only the original dozen plants. What they would have done had it not been for the frost, I can not say, but while they did not bear many berries, the few they did give were so far ahead of any others that I am almost afraid to write "two weeks." Still it is a fact that in this spring of 1878 the "Duncan" gave us ripe fruit two weeks before any other of some 20 or 30 varieties, but not much of it. See here, Messrs. Williams, if you quote this—quote it all—"excessively early, but a very small crop in an

unusual season." Year before last, the Messrs. Williams brought me some quarts of the fruit, as sent to market from the original bed. I then said it was of fair quality—much better than the Wilson. I now say, from the fruit, ripened on my own vines, that it is more than fair, it is *good*. Those not familiar with fruit nomenclature should understand that fruits are classed as "good, very good, and best," and few be they that are placed in the last category. To avoid misunderstanding, I will say that I do not put the Duncan down as a poor bearer, for it must have been in its fullest flower just at the time of the heavy frost. I speak of it as it behaved *this season*, with the condition of unintended cutting of the runners already mentioned. What a difference there is in tastes. In such a multitude of shrubs as I have, there are a few that are prime favorites, and among these is

The Virginian Fringe-Tree,

Chionanthus Virginica.—I use the prefix "Virginian" because some nurserymen will persist in calling the "Smoke-tree," *Rhus Cotinus*, the "Purple Fringe."—The true Fringe-tree, when in full bloom, richly merits the name; it is a cloud of white fringe-like flowers, each individual flower having four long narrow petals, looking as if cut from the thinnest and whitest paper. A gentleman who lives a few miles away, was here a few days ago, and in showing him about I exercised proper tact in reserving the best things for the last. He admired the (so-called) Scarlet Horse-Chestnut, and went into ecstasies over the Weeping Hemlock (and well he might) and other evergreens, just in the glory of their new growth. When at last I brought him to what had been reserved as a *bonne bouche*, as the one choice thing I had to offer, and expected the appreciation that everything else had received, he quietly remarked, "Do you call that handsome?"—It was not so to him, and that is all there is to be said about it.... I have my hobbies—what gardener hasn't?—the Fringe-tree is one of them, and another is

The Ramanas Rose of Japan,

which was figured in the *American Agriculturist* for Sept., 1875. My plants, the red and white, are from the original stock sent out years ago by Thomas Hogg, Esq., and are now great strong bushes; not only "things of beauty," but "a joy forever" of the whole season round. In the first place the foliage is a "joy" of itself. Its dark-green substantial character seems to defy all insect attacks, and though the plants are in a bed with common roses, which are favored by the slug and every other rose enemy, these are always intact. Then the flowers, four inches or more across, are produced in the greatest and long-continued profusion. To be sure they are *single*, but their wonderful fragrance, and their abundance, will compensate for this, even with those who can see no beauty in other single roses. Then after this "Ramanas Rose" has bloomed long after other roses have ceased, it hangs out its wealth of great crimson fruit, as big as crab-apples, and is almost as showy as when in flower. We have a plant of this rose said to be double; it has not yet flowered, but it must not give up any other good quality in making double flowers, to allow it to take the place of the excellent single one.... Speaking of roses reminds me that Mr. Peter Henderson sent me not long ago a specimen of a rose having

Two Distinct Colors on One Plant.

The specimen was not more than six inches high, yet it had two flowers upon it, one a pure white, and the other a deep blush—not such changes as might be due to the age of the flowers, as sometimes happens, but distinct from the start. This is one of those not very rare examples of

"Bud Variation,"

a term happily chosen by Darwin, that now and then occur in our cultivated flowers, and of which the acute florist takes advantage to perpetuate new varieties. Several of our popular roses have originated in this way—notably the two "Sprunts" in this country. A remarkable instance of "Bud variation" occurred in Mr. Henderson's own experience. He sold to a neighbor starting in floriculture

a lot of Bouvardias, all from the same stock, when this neighbor's (Mr. Vreeland's) Bouvardias came to bloom, there was one so unlike the rest, and so distinct and valuable, that it has been propagated as *Bouvardia Vreelandii*. None of the remainder of Mr. H.'s large stock showed the same variation.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

The Abuse of Pain.

The little nerves of feeling which run through all parts of the human body carry to the brain intelligence of disaster and of pleasure. The evil messages they bring are called pains. A pain admonishes us that some injury is done to a part of the body—a finger jammed, a toe cut, an arm burned—or that some part is overworked or is wearied out, and must have rest. The nerves but do their duty, when they report faithfully these things, and our duty is to do the best we can to repair the mischief which caused the nerves to report in the way of pain. But many persons are annoyed by these evil messages, and only seek to silence the messenger. The immediate call is for something to "still the pain." Fortunately, the means employed are sometimes such as correct the evil at once, and so put an end to the trouble reported by the nerves. Especially is this the case when cool water is applied to cuts and burns—the relief and the cure begin and go on simultaneously. The same result is usually attained when hot water applications (or fomentations) are made to bruises and sharp pains of various kinds. Pain, which results from overdoing of any kind, is most reasonably "stilled" by rest—general rest of the whole body, and especial rest of the overworked part. Anything that tends to equalize the circulation of the blood, or to make all parts of the body comfortably warm, and no warmer, helps to set the nerves at rest, or to stop pain and disease. Not long ago I saw a man who was suffering with a violent headache (a neuralgic general toothache) furiously kicking, first with one foot, and then with the other, working to get the blood from his head to his heels, because he had found that the most effectual way to cure his headache. Cool applications to the head, and hot ones about the feet and legs might serve the same purpose.

Morphine Drinking.

But I set out to speak of a habit which prevails to an alarming extent among women—the use of morphine, to quiet pain of one kind or another. I can easily imagine that the habit may grow from ignorance of danger. A fearful pain is lulled by seemingly simple means—an opiate in the shape of morphine. The suffering one rests easy, and pitying friends may believe that morphine was just the thing needed. But has the opiate cured the disease which caused the pain? Not a bit of it. It has only beaten down and silenced the faithful monitor, the nerves which, in the shape of pain, told of injury and begged that help be given to the injured part. It is true that Nature, and not medicine, performs the cure, and that the blessed work of restoration to health usually goes on best during sleep, but it should be natural sleep. This will usually come of itself if you put the body into suitable condition—the pores of the skin open, by bathing or rubbing judiciously, the bowels properly relieved, the stomach nourished by simple food, easy of digestion, the lungs supplied with pure air, and cleanliness and quiet all about the patient. But when you give or take the dose of morphine, you make a deadly attack upon the nervous system, and leave the evil condition of things in the body to go on. The dose must soon be repeated, and as the habit of resorting to an anodyne strengthens, the dose must gradually increase, in order to produce the desired effect. Such a course finally breaks down the nervous system, and leaves the one who resorts to it a hopeless wreck—the worst kind of a drunkard.

Mothers, it is believed that those who are most

likely to become the victims of morphine are women who, as children, were lulled with soothing-syrup (and let it always be remembered that this syrup derives its "soothing" power from the morphine it contains), or dosed with paregoric or the more potent laudanum. They never learn to bear pain heroically. They grow up inclined to self-indulgence, and if hard work and sickness overtakes them, they fall an easy prey to morphine. Do you know that a person who becomes addicted to morphine cannot be decent without it? It is said that a morphine drunkard can never be trusted to tell the truth. She becomes at last so unbearable in disposition, when not under the influence of her medicine, that her friends make every effort to gratify her morbid appetite. All this that I have said applies equally to the use of opium, morphine being but another form of opium. Neither should be used, except in some emergency, when given by a skillful physician.

Care of Children's Eyes.

It is no uncommon thing now to see, or hear of, mere children using eye-glasses, because of some defect of sight. Myopia (or near-sightedness) is the most common defect, and it is said to be manifestly increasing among school-children, in other countries as well as in our own. The eyes of studious children are especially liable to suffer. Reading tires weak eyes, and eyes grow weak or diseased from too steady application to books. There are many disadvantages connected with learning the alphabet in very early childhood, and danger to the sight may be reckoned among them. The eyes of children, like all their other organs and faculties, are adapted to the study of natural objects, or the phenomena of the world into which they have lately come. This study is play to them, and tends to a healthy development of both mind and body. Their introduction to the fine long lines of little black letters in print should not come too early, or too rapidly—not until a love for nature and a faculty for observation have been so cultivated that reading will not be immoderately attractive. Then they must learn to read and study in a proper light, one that shines upon the book or paper, and not directly upon the eyes. A hanging lamp is much to be desired, and those who read in the evening can sit so that the light comes down upon the page from behind them. In gathering about the evening lamp upon the table, those who read should sit so that the light shines upon the book or paper from over the shoulder—and the left shoulder if practicable. The eyes suffer severe strain from reading when lying down. One who is too tired to sit up, is too tired to read. When the body is enfeebled by disease, the eyes are weak sympathetically, and should not be allowed close application. Reading in railway cars, or in any place where it is impossible to keep a steady focus for the sight, causes strain and injury to the eyes. Children should be taught to avoid all these injurious practices.

Most of the youthful cases of near-sightedness within my knowledge are those who began to learn piano-playing when quite young, and it seems to me that the fixing of the sight upon the notes, while the energies are at the same time bent upon the schooling of the fingers, has a peculiar tendency to develop near-sightedness. Ought not a child's music lessons to be made very short, and the hours of practice few and of brief duration? I think so, not only for the sake of the eyes, but also for the sake of the spinal column and the nervous system.

Starch for Fine Muslins.

A solution of Gum Arabic in water makes a nice starch for lawns and thin muslins, giving them a new appearance. Dilute the dissolved Gum until you find by experiment that you have it just right. It takes but a minute to rub a cloth in it, slightly dry and iron it, to test the strength of the gum water. I am unable to give exact proportions. Lawns renewed in this way, after washing, not only look as though just made up, but retain their good appearance wonderfully well.

To Keep Lemons Fresh.

I have found that lemons may be kept fresh for many weeks if put into cold water. Some use sour milk instead, changing the lemons from one pan to another as the milk grows old. This involves

more trouble and risk, and I hardly think it can be any improvement upon the method with water. Still another way (recommended by one in whose judgment I have confidence), is to bury them in the sugar-barrel. We don't all have barrels of

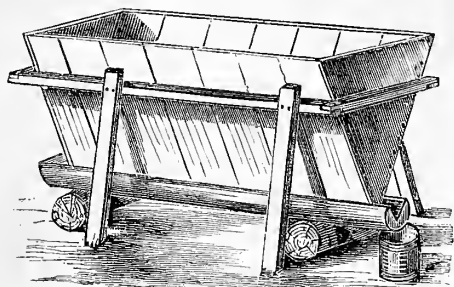


Fig. 1.—A V-SHAPED LEACH.

sugar, but I suspect that salt would answer the same purpose—anything that prevents the evaporation of the fluid of the fruit and keeps it cool. I wonder whether the lemons would not impart some flavor to the sugar in which they were buried. Of course this would not be desirable. My friend said nothing about that.—[This advice, no doubt, refers to brown, or other unrefined sugar, and the following of it can hardly fail to flavor the sugar. We were once told by a sea-captain that he kept lemons for a long time by placing them in a jar, or keg, and covering them with molasses. The chief object is exclusion of air, which the molasses would do most effectively.—Ed.]

In Making Lemonade,

we usually pare off the yellow peel, unless the lemonade is to be used immediately, because the peel, by standing with the sugar, imparts a bitter taste to the drink. Some roll the lemons before they are peeled and sliced, to break the cells and set free the juices. Others slice the lemons upon the sugar, in the proportion of one lemon to two large spoonfuls of sugar, mashing the slices with the sugar and leaving it just covered with water for 10 or 15 minutes before filling up with water.

Lemon Flavoring

may be prepared at home in two ways. 1. Save the peelings of lemons used for lemonade or other purposes, when the peel is not all required by the recipe. With a sharp, thin knife, cut off the yellow part, and dry it quickly without scorching. Keep it in a dry place, and when needed, grind to a fine powder before using. 2. To two ounces of the thin yellow lemon rind, add one pint of good Alcohol, improving it if you choose with a few drops of Oil of Lemon. In a few days it is ready.

Lemon Pudding Sauce.

One lemon—the juice and half of the grated peel. One heaping tea-cup of sugar, one-third of a cup of butter, one egg. Beat well together the butter, sugar, and egg, then the lemon (and a little nutmeg if you choose). After a thorough beating together, add slowly half a tea-cup of boiling water, stirring it constantly for a few minutes, keeping it as hot as possible without boiling it.

Baked Rhubarb.

A delicious sauce is made by baking the sliced stalks of rhubarb with sugar. Cut the slices an inch thick, and bake in a deep earthen pudding-dish, after mixing a tea-cupful of sugar to a pint of sliced rhubarb. This can be preserved by canning while boiling hot, the same as fruit.

Rhubarb and Orange Marmalade.

Take one dozen oranges; pare off the yellow peel, discarding the thick white rind and seeds. Cut the peel into fine bits, and put it with the sliced pulp. Add two quarts of sliced rhubarb, and three pounds of loaf or granulated sugar. Boil the whole slowly until it is quite thick. Turn into enps and cover, when cool, with paper varnished over with white of egg, pasted to the cup.

Strawberry Shortcake.

Any good biscuit mixture will do for the shortcake. It is common to make it with sour cream, or sour milk (and soda, of course), with more or less butter, as the milk is more or less creamy. Roll out to form two thin sheets, placing one above

the other. When done and still warm, the two sheets of the cake easily separate without cutting. Butter each half on the soft side, and cover thickly with sweetened strawberries. Place one sheet above the other, strawberries uppermost.

Canned Strawberries.

It is an excellent way to sprinkle sugar over the hulled berries, and let them stand two or three hours. Say a heaping tablespoonful to a quart of fruit. Pour off the juice into the preserving kettle, and add sufficient sugar to make a good syrup. When hot, put in enough berries to fill one can, and allow them to boil about two minutes. Dip out the berries, boiling hot, into the bottle, and pour in enough of the boiling syrup to fill the can. Seal immediately. Put a fresh lot of berries with a little more sugar into the remaining syrup, and treat in the same way. If syrup remains when all the berries are canned, it makes excellent jelly. If the berries stand too long in the sugar, it injures their color and leaves them less firm.

Leaches, Lye, and Soap.

In the older States, before the general use of coal as fuel, a leach was an important household appliance; the ashes from the wood burned during the winter were carefully saved, and in spring, these, with the careful housewife's savings of soap-fat, were put to use in the annual soap-making. As wood as a fuel went out of use, good, honest home-made soft-soap also disappeared. Still there are localities where wood is yet the fuel, and though these are much less than formerly, they are sufficient to bring us a number of inquiries about lye and soap-making. The value of ashes depends upon the kind of wood used, the soft woods yielding ashes very poor in potash, which is the important constituent so far as soap-making is concerned. Where soap is to be made from ashes, the first step is to extract their soluble parts, to get a solution of them in water, known as *lye*. To do this, the ashes are placed in some receptacle, called a *leach*, in which water can gradually trickle through them, and come out below as a strong solution or lye.

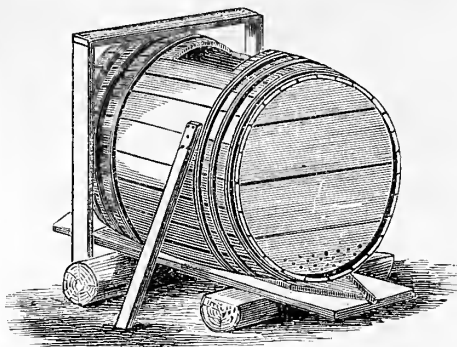


Fig. 2.—USING A HOGSHEAD AS A LEACH.

Our correspondent, L. D. Snook, of Yates Co., N. Y., sends us drawings of two common forms of leaches. Figure 1 represents the old-fashioned V-shaped leach, sufficiently well to show its structure. There is a frame of 2 x 3-inch scantling, about a foot from the top, which is stayed by side pieces; the bottom is a log, in which a gutter is dug, to convey the lye to a pail, or other receptacle, placed at its lower end. The manner in which the leach is supported, and the arrangements of its side-boards, is sufficiently shown in the engraving. Sometimes an old sugar or molasses hogshead, obtainable cheaply at "the store," is used as a leach. The hogshead, first having half-inch holes bored in its lower staves and ends, is set up, as shown in figure 2, upon a grooved plank, which will convey the lye to a vessel placed to receive it. This is kept in proper position by a frame, or by braces at the sides, as shown in figure 2.

To "Set the Leach,"

as putting it in operation is called. The old method was to put in the bottom some bricks or stones, then some brush, and over this a layer of straw, and then put in the ashes. This will answer, if no

better method can be followed, but it is much easier and better to place on the bottom of the leach, of whatever kind, a piece of old blanket, or old carpet. This will accomplish the purpose for which the straw, etc., are used—i. e., to prevent the ashes from clogging up the holes, and allow the lye to flow out. Ashes moisten slowly, and in filling the leach, it is better to put in a small quantity at a time, moistening each layer as it is put in, and compacting it with a pounder of some kind. If the ashes are thus moistened all through, the leach will work more evenly than when filled dry. It is customary to make in the top of the ashes a cavity large enough to hold a pailful or two of water, and replenish the water as it soaks away. The more slowly the water percolates among the ashes, the stronger the lye will be. It is a common practice to put lime in the leach, six or eight quarts of quick lime being placed on the first layer of ashes. This makes the lye much stronger, the lime converting the carbonate of potash, as it exists in the ashes, in part into caustic potash.

Making Soap with Lye.

There are some facts about soap-making not generally understood, and are here given in brief. The alkali in lye from wood-ashes is always *potash*. Potash will not, with any fat whatever, form a *hard* soap. All hard soaps contain *soda*, instead of potash. All the recipes that are sold for making hard soap from potash, or from lye, require the use of salt. The salt decomposes the potash soap, its soda taking the place of the potash and forming a hard soap with the fat, while the potash, having formed a new combination, remains in the liquid at the bottom of the kettle. From lye alone, then, only soft soap can be expected, and this, when well made, is very useful for ordinary domestic purposes, and vastly better than the soft soap sold all over the country, which is merely common hard soap, thinned to a sort of jelly with water, and is a most expensive article to purchase. While almost every farmer's wife, who makes soap from lye, can do it satisfactorily, and have the soap "come" every time, she will find it difficult to give a precise rule, so much depends upon practice and judgment, or "gumption." In a general way she takes the strongest of the lye, and boils it with the rough grease, pours this into the soap barrel, and then adds the weaker lye as it runs from the leach. The usual result is a barrel of good strong soap, made without much reference to rules or proportions. So far as we can come at a rule, for soap with lye, an experienced soap-maker says: "Have the lye strong enough to float a potato. Take 12 pounds of clean grease, previously tried out, and add to it four gallons of lye, and boil together over a slow fire; put this into the soap barrel, and add more and weaker lye, to make a barrel of soap, frequently stirring."—It will be seen that this is far from definite, and we shall be very glad if some one will give a more precise rule. In making soft soap from potash, the usual rule for a barrel of soap, is 12 lbs. of potash to 14 lbs. of grease. Dissolve the potash in about two pailfuls of hot water, poured on it over night. The potash dissolves quite slowly, especially if in compact lumps. Have the grease, previously rendered, in a barrel, and pour on it the potash liquor, stirring well. If some of the potash, as will probably be the case, remains undissolved, pour on more hot water, and the next day add this to the barrel, and continue doing so, stirring thoroughly, until the potash is all dissolved. Then add cold water, in moderate quantities, stirring each time, until the barrel is full.

Butter-Coolers.

Some time ago the manufacturer of a porous butter-cooler, Mr. A. Reeve, of Camden, N. J., sent us one of his coolers for trial. After careful testing, we find it to be a desirable means for cooling butter in hot weather. It is well known that the process of evaporation results in a reduction of temperature; and this is the principle upon which this cooler operates. It consists of a hollow piece of earthen-ware, as shown in figure 1. The bottom

is filled with water; and upon it is placed the plate containing the butter, which is covered by the upper part, also containing water; which gradually soaks through the porous substance, and evaporates from the surface, producing a temperature beneath the cover as low as 38 or 40 degrees, when the evaporation is active. When placed in an airy position, evaporation is greater, and the temperature proportionately lowered. Figure 2 shows the cooler complete. At fig. 3 is a cooler that can be made in a moment; a large plate is used for the stand. The plate is filled with water, in which a piece of brick, or flat tile, is placed. On this is set the plate of butter. A flower-pot, having a wooden plug to serve as a handle, is inverted over the butter, with its lower edge in the water. The porous pot absorbs the water, or it may be well moistened occasionally, and as it dries, it will cool the butter very rapidly. It should be placed in a draft of air, as in a cellar window.

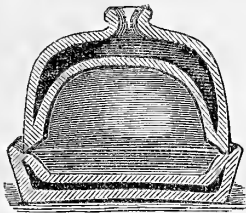


Fig. 1.—SECTION OF COOLER.

Household Notes and Queries.

The readiness of the many members of the "American Agriculturist Family" to help one another, has been shown on many occasions, but never more strikingly than in the replies to "Recipes Wanted," in May last. One housekeeper wished a recipe for the "Queen of Puddings." We made her want known, and forthwith *forty*—save one,—39 of her sisters came forward to her help. The answers came from Maine to Florida and Texas in one direction, and from Vermont to Kansas and Colorado in the other, as well as from almost every intervening State. We had recipes in brief and *in extenso*; in the shortest possible prose, and the longest possible *verse*—both recipe and letter. If there is any one pudding that we ought to know about, it is

THE QUEEN OF PUDDINGS, and here is the recipe: One pint of bread-crumbs, one quart milk, one cup



Fig. 2. COOLER, COVERED.

sugar, butter size of an egg. Yolks of four eggs. Flavor with lemon, and bake as custard. Beat the whites of four eggs to a froth, mix with a cup of powdered sugar, and juice of a lemon. Spread a layer of fruit jelly over the custard while hot; cover with the frosting, and bake until slightly brown. To be eaten cold, with cold cream, or warm, with any sauce that may be preferred....So far as the composition goes, the many recipes were surprisingly alike, but the comments attached were very amusing, such as "The best pudding ever invented;" "The richest pudding known to cookery;"—But the funniest part of the whole matter is that the recipe started from this office several years ago,—so long ago that we had quite forgotten it, and now it comes back to us from nearly 40 housekeepers in the precise form in which it first appeared in our columns....In the same with the above paper we asked our friends for a

RECIPE FOR "SCRAPPLE," and this has been responded to by over 20 of our readers, but as that can be useful only in cold weather, when pigs are made into pork, we hold on to these until a more timely season....The promptness and the number of responses to these requests are very gratifying, as they show that housekeepers all over the country are ready to come to the help of any one of their sisterhood. We at the same time asked for recipes for the best manner of using

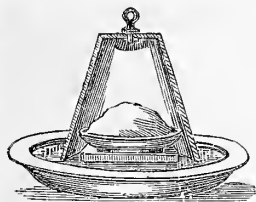
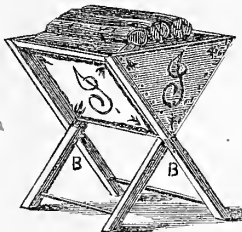


Fig. 3.—FLOWER-POT COOLER.

RYE FLOUR, ALSO FOR SALT RAISING FOR BREAD. We have received several of each of these, which will be given in due time. In the same month, May last, we had an article on "Women's and Children's Shoes," in which we gave a recipe for

SPONGE-BLACKING, such as is, or used to be, sold by all the druggists. A correspondent in Saco, Me., writes that he has made the same blacking for many years in his family, and finds that "the addition of one ounce of camphor to each pint of the blacking preserves it from drying hard, and cracking, as it will do without it." He also suggests that it is much less trouble to purchase the shellac-varnish ready-made at a paint-shop, and add the other ingredients. No doubt. But our recipes are intended for those who must start from first principles, many of whom are beyond the reach of those things which may be readily had in towns and cities.

A PORTABLE FOLDING WOOD-BOX.—From L. D. Snook.—In many localities, even in mid-summer, there are cool spells, in which a little fire in the evening is necessary, not only for comfort, but for health. Those who, with the approach of warm weather, put away all the fire-making appliances, may find a folding wood-box, one which may be used when needed, and set aside when not wanted, a useful household contrivance. The box referred to is shown in the engraving, and may be of a size suited to the wood used, and the quantity it is required to hold. It consists of a frame made of slabs of pine, or other convenient wood, an inch and a quarter thick, hinged together with a wooden pin, or by carriage bolts. The sides and ends are made of any heavy canvas or bagging, tacked to the frame, as shown in the engraving. If desired, the wood-box may be ornamented by the use of brass, or other bright-headed tacks, and the working of a monogram or initial letter on the sides and ends with some bright colored worsted. Such a wood-box will keep "dirt" from the floor, and when the time for which it is required has passed, it can be so folded as to occupy but a small space until a change in the weather to cooler may call it into use again.



FOLDING WOOD-BOX.

BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

In trying to describe the Telephone I did not expect to make the younger boys and girls understand it, but I hoped by first stating some facts about sound, electricity, and magnetism (which is only a form of electricity), to give the older youngsters, and perhaps some who are not young, a general idea of it. Last month I told you about *induction*, and that a current of electricity in passing around a piece of soft iron would induce magnetism and make the bar of iron a magnet for the time, but as soon as the current stopped the soft iron ceased to be a magnet. It was also stated that a bar of steel could be made a magnet, and hold its magnetic power, forming a permanent magnet, and that a permanent magnet if passed into a coil of wire would induce a current of electricity in that wire. These points were described more in full last month; the object being to show you that electricity could make (or induce) a magnet, and on the other hand a magnet could make (or induce) a current of electricity. I must ask you at this time to attend to one more point, which will bring us

Near to the Telephone.

In figure 1 we have a bar of steel, *a*, which is a per-

manent magnet, and around it is a coil of wire, the wire being covered with silk or cotton to keep it from actually touching the steel; the ends of the coil, *b*, are in contact. If we now bring a piece of sheet-iron, *c*, near to one end of the magnet, its magnetism is disturbed, and at the same time a current of electricity will be started in the wire; on taking the sheet-iron away, the magnet returns to its former condition, and at the

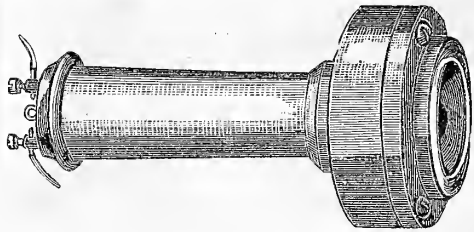


Fig. 3.—THE TELEPHONE COMPLETE.

same time there will be a movement of electricity in the wire. The piece of sheet-iron induces a change in the magnet, and every change in the magnet induces a current of electricity in the wire. This may be repeated as often and as rapidly as we choose, and thus keep up a constant disturbance in the wire. Now one step further. In figure 2 we have the upper magnet and wire quite the same as in figure 1, but below at *d* we have another just such bar magnet, wound with wire in precisely the same manner, and the ends of the two wires, *b*, *b*, are joined together. By bringing the sheet of iron, *c*, near to the upper magnet, that as before stated will so affect it as to start a current of electricity in the wire. This current will pass through the coil around *d*, and as might be expected will disturb its magnetism, as would be shown by its action on another piece of sheet iron, *e*, placed near it. As *c* is moved up and down near the end of the upper magnet, the lower magnet would agitate *e* in the same manner. No matter if the wires between the two were several feet, or several miles long, the disturbance caused in the magnet, *a*, would be instantly repeated in the magnet, *d*. This is, in brief,

The Principle of the Telephone;

let us see how it is applied in use. Figure 3 gives the

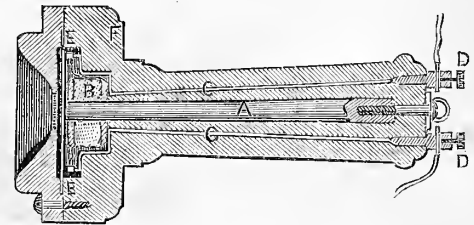


Fig. 4.—INSIDE OF TELEPHONE.

appearance of the instrument. All that is seen is an affair of some hard-wood, with binding screws for attaching wires at one end; the other end is enlarged and hollowed out to form a mouth-piece; on looking into this mouth-piece you can only see a thin iron plate. In using the Telephone, one talks distinctly at the mouth-piece, while another, who has a similar instrument, at the other end of the wire—which may be five, ten, or fifty miles long—holds the mouth-piece to his ear, and hears distinctly the words that are spoken. You will recollect that I told you of speaking with a lady who was three miles or more away; just such an instrument as here shown was used. The real size of the Telephone is not quite six inches in length, and about three inches across the large end. But you will wish to know what is inside of the instrument.

The Machinery of the Telephone,

this is given in figure 4, which shows figure 3 divided lengthwise. Beginning at the upper or wide end we have the mouth-piece, and directly below this is a thin iron plate, the section of which is shown by the white line, *E*. As the plate used for taking the portraits called "ferrotypes," or "tin-types," was found to be of the right thickness—or more properly, thinness, this is used, though any other very thin iron would answer as well. In the center is a small steel rod, *A*, which is a permanent magnet, and this can be moved up and down to fix it in just the right position, by the screw seen at the lower end. We now notice the most important part, shown at *B*, which is a sort of spool, around which are wound many yards of fine copper wire, which is covered with silk; the two ends of which, *C*, *C*, pass down through what we may call the handle of the instrument, to the binding screws, *D*, *D*. This being the arrangement of the parts—how do they work? Let us go back to our figure 1, and we find we have the same parts that were described there; we have a steel magnet, and a coil of wire, but in the Telephone the coil is of much finer wire, and wound round and round a great many times to get the needed power. Then in place of the sheet-iron,

c, in figure 1, there is the very thin plate, *E*, figure 3, which is fastened at its edges. When one speaks at the mouth-piece, the motion of the air caused by the voice, sets this thin iron plate in motion, just as the parchment of the "Street Telephone," described in May, is made to vibrate by the voice. Of course these movements of this iron plate, or diaphragm, are very minute, but it does move, and at every motion or vibration, it disturbs the magnetism in the steel-bar, *a*, which in turn, sets up a current of electricity in the coil of wire, *B*, and we have just what was described in figure 1, over again, only in a vastly more delicate manner. But with one Telephone we can do nothing; to be of use the instrument

Must not only Hear, but Talk,

and to complete the affair, the instrument (figs. 3 and 4) is joined by means of wires attached by the binding screws, to another instrument precisely like it. These wires may be a few feet or a few miles long. Now you see there will be just such an arrangement as was shown in a coarse way in figure 2. A person speaks at the mouth-piece of one telephone, while another person holds the other telephone to his ear. The voice causes the iron plate to vibrate, that disturbs the magnet, which in turn starts a current of electricity along the wire; this current passes around the magnet in the other telephone, and affects that magnet, and that sets the thin iron plate in that instrument to vibrating. And here comes the curious part of the whole affair. The iron plate, or diaphragm, in the second telephone, will repeat exactly the motions of the first, and as the first is set in motion by the vibrations of the air made by the voice, the diaphragm in the second instrument will, by its vibrations, set the air near it in motion, and produce a precisely similar sound. If you at one telephone say, "Ah," the vibrations that this sound causes in the diaphragm, will be repeated by the diaphragm in the other telephone, which will set the air in motion to produce "Ah." What happens with this simple sound, takes place with all other sounds, and so exactly are the vibrations at one tele-

neighbors' farms.—This is not the kind of pigeon-keeping we would encourage, but there is a kind which the older boys may undertake with profit. Pigeons on a farm are generally, and justly, regarded as a nuisance. They are great feeders, and unless food is supplied to them, they will get it where they can, and in the garden and grain-field they are about as bad as so many crows, for they will go for the sown peas and grain. On the other hand, they are of such a quiet disposition, that, if food be furnished them close at home, they will not wander for it. A friend who raises pigeons largely, to supply his own table, and who is also a good gardener, and values the products of his gardens, informs us that he has no trouble with his pigeons, as he keeps food where they can always get it, and they do not stray away. Those boys who live near watering-places, or where there are hotels or good markets, may no doubt make pigeons profitable by supplying the demand for squabs, which always bring a good price at such places.

The pigeon-house is generally a make-shift affair, but those who go into pigeon raising as a matter of profit, should make proper arrangements for the birds, and not only provide them with a suitable house, but see to their proper feeding, and what is quite important, provide protection from cats, rats, and all other enemies. Our correspondent, Mr. L. D. Suook, Yates Co., N. Y., sends drawings of a house of this kind, which seems to provide properly for all requirements. The outside

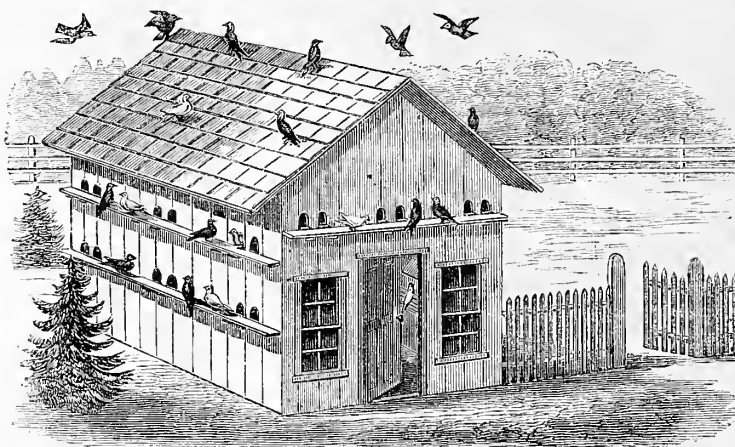


Fig. 2.—A NEAT PIGEON-HOUSE.

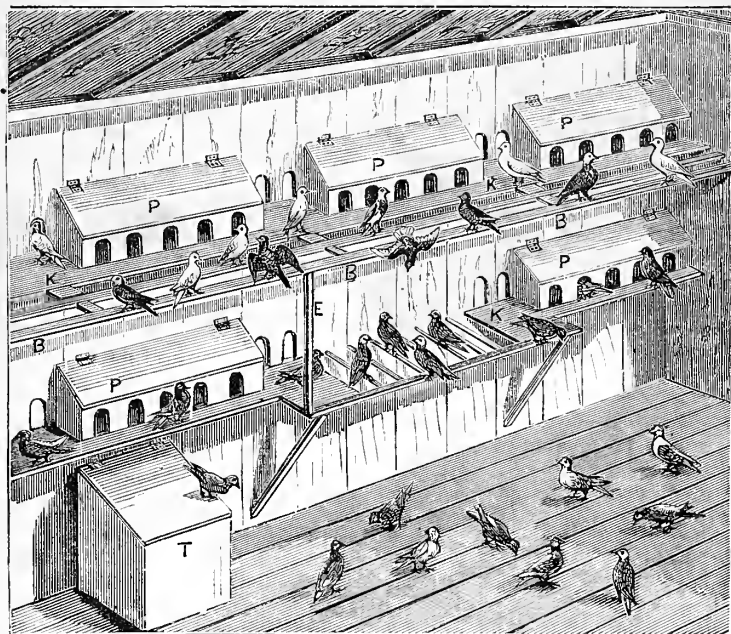


Fig. 1.—INTERIOR OF PIGEON-HOUSE.

phone repeated by the other—the very tones of the voice, whether of speaking or singing—are reproduced,

Even Though Miles Away.

The Telephone is already coming into use, and has the great advantage over the telegraph in rapidity, and in not needing a skilled operator. Any one who can talk, can use it. Many are put up between offices and factories, and between the dwellings of merchants and their offices.... Just as I write this, news comes of another wonderful invention,

The Microphone,

which is a contrivance that magnifies small sounds, just as the microscope magnifies small things. It is said to enable one to hear even the step of a fly, and to magnify a whisper to a loud tone, while ordinary speech is a roar. This will help the Telephone wonderfully.

Pigeons and Pigeon-Houses.

Pigeons are usually the first pets the country boy has; a pair is given him, or he trades with another boy for them, fits up some kind of a pigeon-house in the peak of a barn, or in a shed, and his pigeons, while very interesting to him, soon become a pest on his father's and the

neighbors' farms.—This is not the kind of pigeon-keeping we would encourage, but there is a kind which the older boys may undertake with profit. Pigeons on a farm are generally, and justly, regarded as a nuisance. They are great feeders, and unless food is supplied to them, they will get it where they can, and in the garden and grain-field they are about as bad as so many crows, for they will go for the sown peas and grain. On the other hand, they are of such a quiet disposition, that, if food be furnished them close at home, they will not wander for it. A friend who raises pigeons largely, to supply his own table, and who is also a good gardener, and values the products of his gardens, informs us that he has no trouble with his pigeons, as he keeps food where they can always get it, and they do not stray away. Those boys who live near watering-places, or where there are hotels or good markets, may no doubt make pigeons profitable by supplying the demand for squabs, which always bring a good price at such places.

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compartments, with an entrance to each in front, which opening is 3 inches wide by 4½ inches high. Roosts, *B*, *B*, are provided, which are hinged to the platform, *K*, and held in place by the upright, *E*; these roosts may be let down when it is desirable to examine the nests by means of a step-ladder placed against the platform. On the lower tier, on each side, are but two hatching boxes, to allow of a number of roosts, of strips a foot long, to be placed between them. At *T*, is shown a box for storing feed, which should be given to the birds within the house, in stormy weather. A building of this kind should be placed where it can be shaded by trees in the heat of the day, and in a quiet place, where the nesting birds will not be disturbed by noises. Besides abundant feed, the birds should be constantly supplied with water, and have a mixture of salt, sulphur, and gravel, placed where they can always get at it.

Aunt Sue's Puzzle-Box.

ENIGMATICAL BOUQUET.

1. Part of the rainbow. 2. What some of us love to kiss. 3. A sugared letter. 4. What children love, and a bunch of hair. 5. A trap and its victim. 6. A crystal of water and a tear. 7. Went up.

PUZZLE.

My fifth is one-half of my first,
My whole is divided by two,
My second's the same as my fourth,
Now guess it you surely can do.
To aid you more hints I will give:
Twice my third is a tenth of my first,
My whole of five letters is seen,
Which all should be, even the worst.

JUVENIS.

SQUARE WORD.

1. Apt. 2. A vegetable. 3. A direction. 4. A girl's name.

CROSS-WORD.

My first is in butter but not in milk.
My next is in satin but not in silk,
My third is in rain but not in snow,
My fourth is in fast but not in slow,
My fifth is in ache but not in pain,
My sixth is in snow but not in rain,
My seventh is in light but not in heat,
My eighth is in sofa but not in seat,
My ninth is in Autumn but not in Fall,
My tenth is in whole but not in all,
My eleventh is in word but not in rhyme,
My whole names a man of ancient time. ISOLA.

NUMERICAL ENIGMAS.

(S. W. W. offers the following enigma as a stumper.)

- I am composed of 39 letters:
My 13, 2, 28, 11, 37, means time and pains.
My 26, 1, 20, 13, 39, to be acquitted.
My 10, 18, 3, 33, is a blemish.
My 29, 17, 5, 24, to polish.
My 38, 30, 32, 12, 4, 9, 20, 36, 34, to pass.
My 23, 6, 21, 14, a side-piece.
My 7, 27, 8, 22, 19, 30, 25, a butcher.
My 31, 16, 35, 14, is a kind of cloth.
My whole is a familiar quotation from Young's "Night Thoughts." S. W. W.
- I am composed of 12 letters:
My 4, 11, 5, sometimes goes with a kiss.
My 12, 8, 7, 3, is a planet.
My 12, 10, 9, 6, is to sap.
My 1, 2, 9, is a propeller.
My whole is a common flower. FRANK KENNEDY.

A VERY EASY ENIGMA.

- I am composed of 9 letters:
My 5, 8, 3, 4, is something that you are sure to find in the woods.
My 6, 7, 2, is an animal.
My 1, 9, 7, 2, is what you see in winter.
My whole is a very nice vegetable. P. T. VIBERT.
- I am composed of 11 letters:
My 8, 2, 11, is the shepherd's deity.
My 9, 5, 8, is the name of a vine.
My 1, 7, 4, is a pronoun.
My 1, 10, 3, 6, is what most cows have.
My whole is a musical instrument. MYRA A. HANLON.

ANSWERS to the Puzzles in May number will be given next month.

ABOUT THE PRIZE ENIGMA.

One letter received on the subject, will make a very good introduction:

"Dear Aunt Sue:—I send you with this, the answer to February prize enigma. You are the one that should get a premium for getting up such a puzzle; it superseded the Eastern question and the silver wrangle at our house. Geography and political economy were put aside, and etymology came to the front. We don't think that Miss Clara Josephine will have a very heavy contract in making the drawings next May.—Respectfully Yours, G. M. T."

Miss C. J.'s aid was not called into requisition, for only seven answers were sent. Very pleasant letters accompanied most of them, telling the process by which the desired end was attained.

The answer to the enigma is, "Pungled; said especially of grain which has lost its juice."

The names of the patient and persevering solvers are: LYMAN STEDMAN, Jedd, Jefferson Co., Ohio; H. A.

FRINK, Westerly, R. I.; H. E. WHITNEY, Monticello, Sullivan Co., N. Y.; GEO. M. TAYLOR, Riverside, Burlington Co., N. J.; CYRENE GRIFFIS, Montrose, Susquehanna Co., Penn.; J. A. BOSTON, Newburyport, Mass., and JOHN B. BAKER, Concord, Merrimac Co., N. H.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

ALPHABETICAL QUERIES.—1. V inverted makes a caret (carrot). 2. Pea and tea (P and T). 3. B (bee). 4. U (you). 5. B, C, and R (be, see, are). 6. J (jay). 7. I (eye). 8. G (gee). 9. D (dee). 10. Y (why). 11. W (double you). 12. Q (que). 13. Red C (sea). 14. X specked (expect). 15. Dutch S (duchess). 16. Bar on S. 17. L (ell).

CHARADE.—C—A—P—Cap.

NUMERICAL ENIGMA.—Learning is to the studious, riches to the careful, power to the bold, and heaven to the virtuous.

CROSS-WORD.—Constantinople.

ALPHABETICAL ARITHMETIC.—(314)369501(2769).
Key—Palmerston.

PI.—Black lead does not contain a single particle of lead, but is composed of carbon and iron.

DROP-LETTER PUZZLE.—Never cut out a piece of a newspaper till you have looked on the other side.

TRANSPPOSITIONS.—1. Teach, cheat. 2. Rome, more. 3. Broad, board. 4. Desert, rested. 5. Patch, clasp.

SQUARE WORD.

CONCEALED FISH.

Key—Palmerston.

Forward.

Backward.

Correspondents will save time, if they will address their letters (to Aunt Sue) to Rowayton, Fairfield Co., Conn., from July to December of this year. But please remember that AUNT SUE is not Orange Judt Co.; the latter must be addressed at 245 Broadway, N. Y. City.

The Young Microscopist's Club.

A share of last month's talk was given to an account of a common insect parasite upon chickens, and it was there stated that those animals that fed upon other animals, and those plants that fed upon the juices of other plants, were termed *parasites*, and we may add that those having this manner of living, are called

Parasitic Animals and Plants.

Not only do the higher animals afford homes for insect and other parasites, but *insects themselves* are preyed upon by other insects, a matter no doubt of much discomfort to the insects thus visited, but one of real importance to us, who are obliged to look upon some insects as our enemies—as we shall presently see. A remarkable instance of an insect being troubled by parasites, was brought me a short time ago by a gentleman living in Westchester Co., not far from New York City. He brought specimens of the Colorado Potato-Beetle—now generally known as the “Potato Bug”—so completely covered by small creatures, that the beetle itself could not be seen; it was even more thickly covered than the beetle at *a*, figure 1, which shows both of the natural size. The little creature is

A Parasitic Mite,
which might be called the “Potato-Beetle Mite,” were it not found on other beetles also. I think that I have already told you that mites differed from the true insects, among other points, in having the body all in one piece. This mite was first described by Prof. Riley, who gave it the scientific name of *Uropoda Americana*, there being other species in Europe. The name *Uropoda* is from Greek words meaning *tail* and *foot*, on account of a peculiar tail-like arrangement by which this attaches itself to the beetle. The engraving is from Mr. Riley's work on “Potato Pests”; *b* gives the mite enormously magnified, showing its underside. To hold fast to the beetle, the mite has a pair of remarkable organs, which, when not in use, lie just under the skin, between the legs, as shown by the lines in *b*, but when in use, they are extended as in *c*, reaching out beyond the head; each has a minute claw at the end, more plainly seen at *d*. We now come to the “tail-foot” part, from which the creature is named. In Europe this was long supposed to be a kind of silk, to enable the mite to hold fast with, but Mr. Riley has discovered that the thread is the dried excrement of the mite, made to serve as a sort of anchor; the thread of this is shown at *e*. As you may suppose, so many parasites as at *a*, all feeding upon it, soon

Put an End to the Beetle,

and this brings us to a very interesting thing concerning injurious insects. Scarcely one of you, who live in the country, at least in the Middle and Northern States, but has seen the Colorado Beetle, or “Potato Bug,” and those who live elsewhere have heard much about it; how rapidly it ate up the potato vines, and if the insects were allowed to have their own way, we should be obliged to go without potatoes. To get potatoes at all, in many parts of the country, the farmer is obliged to poison the beetles. But when an insect increases in large numbers, its natural enemies increase also, and though most people look upon birds to keep insects in check, these probably do but little as compared with

Their Insect Enemies,
which attack and feed upon them in one form or another, whether in the egg, the larva, the pupa, or perfect state. Besides a spider and the mite here described, there are known to be *over two dozen* true insects that prey upon the potato-beetle. This beetle, being so destructive, has been watched more closely than others, but it is found to be the case that, whenever an injurious insect gets to be very abundant, its insect enemies increase rapidly also. Now is not this a wonderful arrangement of things? By growing millions of acres of potatoes, we allow of the increase of an insect that, when it only had certain wild plants to eat, gave no trouble, but with this food provided for it, it multiplied so as to threaten to stop potato culture; but other insects come to our help in dozens, and if we could afford to wait, the evil might in time be cured without the use of poison. As it is, we are greatly aided by other insects. Does not this look as if some Great Mind really directed these matters?... Though I have said so much about parasites, I must just mention another, a dozen or more being sent every season as a great wonder. Figure 2 shows what a great many of you must have seen; a



Fig. 2. TOMATO-WORM.

Tomato “Worm,” or Caterpillar,

is a great, green, unpleasant-looking, but harmless creature to all but plants, and those it eats heartily. These caterpillars are frequently seen almost covered with white things, which most persons take for eggs. They are really little cocoons. When the caterpillar was young, a very tiny fly stung it and dropped in her eggs; these eggs hatched, and numerous little caterpillars or maggots, lived inside the big one; when they reached their full size, they ate their way out, and spun these little nests, and went to rest. If you find a “worm” thus loaded, place some of these cocoons under a glass, and you will no doubt be able to see and examine the perfect little fly. It is very small, and you might not notice it unless on the watch for it.... Last month I promised to say something

About Mounting Objects.

In March last, I described one method of mounting seeds and other opaque objects, and will now try to answer those who have inquired about transparent objects, or those seen by transmitted light, and as our microscope

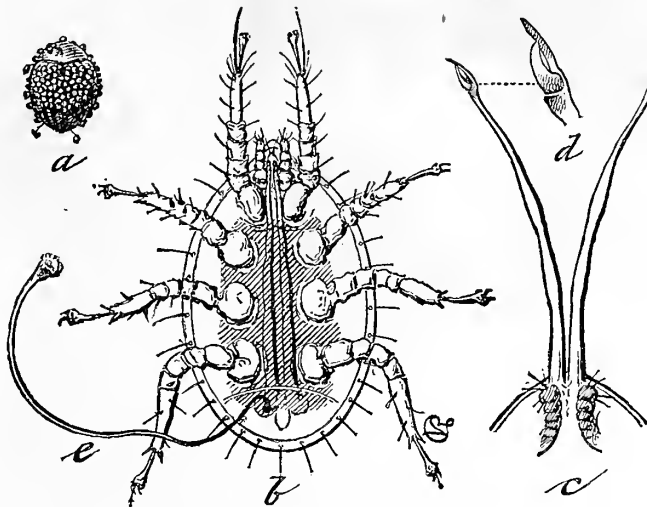


Fig. 1.—POTATO-BEETLE PARASITE (*Uropoda Americana*.)

and our talks about it are for beginners, I can only give you the simplest methods, and you will find that these will require all the time and skill you will care to give, while the procuring of the materials will be more of an expense than some will care to go to. In the first place, you will need some

Glass Slides;

these are sold at the instrument stores, and for microscopes of high power should be of the finest plate-glass; for your purpose, the clearest glass that you can find among the glazier's scraps will answer, and you can get the glazier to cut them for you in pieces three inches by one, which is the usual size, though some prefer them $2\frac{1}{2} \times \frac{3}{4}$ inch. Then the objects must be covered with thinner glass; for nice preparations, to be used with high powers, thin glass covers are made on purpose, varying from $\frac{1}{50}$ to $\frac{1}{150}$ of an inch in thickness; these are round or square, one half to one inch across, and cost from \$1.25 to \$3, or more, an ounce, according to thin-

ness. These must be used for high powers, but to mount objects for our Microscope, while it will be neater and better for those who can afford it to have this thin glass, you had better begin with the very thinnest you can find, and practice at first with that. You will also need some

Canada Balsam,

which those of you who live where there are Balsam Fir trees, will know all about, and that it is found in blisters in the bark of these trees, and is easily collected by cutting these swellings, and squeezing out the honey-like liquid into a spoon. Most of you will have to get it of the druggists; an ounce in a wide-mouthed vial will last a long time. Canada Balsam is a natural mixture of a clear resin with oil of turpentine, and when exposed, the turpentine will evaporate and leave the solid resin. If left exposed, it will, after a time, become very thick and finally solid. If the vial is stopped by a cork, it will be apt to cement the cork in firmly, and it will be well if you can find some kind of a tin box, to go over the mouth of the bottle like a cap.

Other Articles that may be Needed,

are a small bottle of Oil (Spirits) of Turpentine; one of Alcohol; and one of Solution of Potash (Liquor Potassae of the druggist). Besides these, you will need small forceps, or tweezers, and mounted needles, already described in the sheet that goes with the microscope. A brick or piece of soapstone that you can warm on the stove, or in the oven, will also be needed, and it will be convenient to have a contrivance for holding the slides when hot; for this the spring clothes-pins will answer, arranged by cutting off one arm, as suggested by Prof. Phin, as shown in figure 3. After all this preparation,

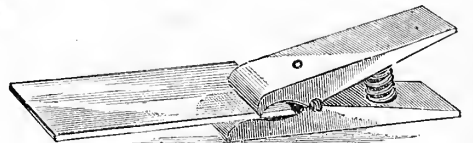


Fig. 3.—FOR MOUNTING OBJECTS.

which looks more forbidding than it really is, let us proceed to

Mount a Fly's Wing.

First clean your slide thoroughly, and put it on the warm brick or other contrivance for warming, until it is warm enough to make the balsam very thin; drop on the center of the slide a single drop of the balsam, from a small glass or a wooden rod, which is to be kept in the vial for the purpose. If any air bubbles appear, remove them by means of a needle. Then take the wing up by the forceps, and place it gently on the balsam, putting it on in such a manner that no air will get between it and the balsam; drop on a very little more balsam, and then carefully put on the cover, which has been warmed; the cover should be put on, one edge first, and gradually let down upon the balsam so as to not inclose any air; press the cover down slightly, and put the slide away in a warm place, such as a shelf near the stove, until the balsam becomes quite hard. Some of the balsam will no doubt project beyond the cover up on the slide; when this gets hard, most of it can be easily scraped off, and the rest removed by a little turpentine on a cloth. With some objects it may be necessary to hold the cover down with a clothes-pin clip while hardening. Sometimes the wing or other object will not take to the balsam readily, but leave air between the two; in this case the object is first soaked awhile in oil of turpentine, which usually removes the difficulty.

Some Small Insects Entire,

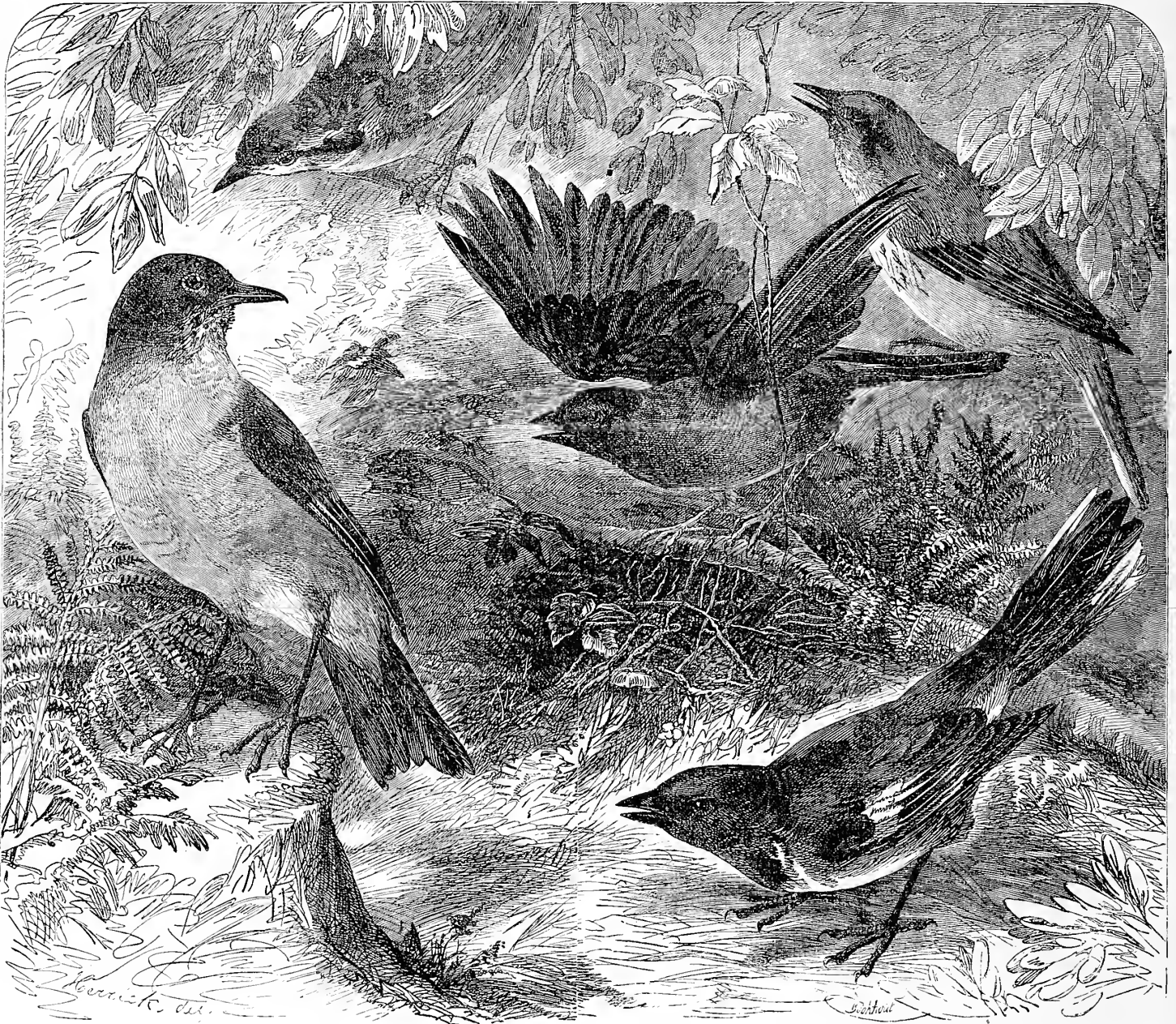
as well as the feet and other parts of large ones, are sometimes mounted in Canada Balsam, but first require soaking in the potash solution to make them more transparent; they are then soaked in water to remove the potash, then in strong alcohol to take out the water, then in turpentine to get rid of the alcohol, and finally they are ready to go into the balsam. When the object is mounted, the slide may be covered on one side, or both, with colored paper, leaving circular openings over the object, and the label written on this, or the glass may be left uncovered, and a small paper label attached with gum tragacanth, or paste.—Much in the way of mounting must be learned by practice; those who wish to know of other methods, should have some work on the subject. One of the best works, at a moderate price, is Prof. John Phin's “How to Use the Microscope.” Price 75 cents.

More About Birds.

The account given last month of the strange Bower and Gardener Birds, has interested not only the youngsters for whom it was intended, but many of our older readers have shown much interest in them, and would like to know more—especially about the Gardener Bird. That being a quite new discovery, we gave the fullest account we could find, and we must wait until some other naturalist visits the island where it is found. Some of the youngsters wish we would tell more about and give more

almost always very unlike in this. So naturalists, in describing birds, take characters that are more permanent: the form of the head and bill; the legs and feet; the wings and tail, as to number of certain quills, and other points with which color has nothing to do. You are not to understand from this that color is of no importance in describing birds, but that while it is the first thing that strikes your eye, you should, in observing the birds you see, take notice of other points. The picture here given of a group of our native birds, illustrates what has been said. If we could show you the birds themselves, you

rear our young on insects and worms, we like a little fruit with our meat, and go to the trees and pick out a few wormy cherries—pop—bang—dead Robins! Then what is more than all, the fall horticultural meetings pass resolutions against us, and call us rascals; but some have the grace to say that we do make a good pot-pie. If these men would only let us mind our own business, we could put money in their pockets."—So much for the Robin's story. Watch him carefully, and see if he is not right. The bird on the ground in the picture, though often called Ground or Marsh-Robin, does not belong to the same



pictures of our common native birds, and we are always glad to have our young friends express their wishes. While the greater number of our junior readers were born in, and live in the country (and we hope that they may find it best to stay there), still very many go to the country for a few months only, in the summer; and to these all the country objects, the trees and flowers, the birds and insects, seem quite different from what they do to those who are always among them; and it often happens that those who are in the country for a short time only, learn more about, and really know more about, country objects than those who are constantly among them, just as a country person visiting a large city will see more of the city's "sights," than one who lives there will see in ten years. There is one trouble about giving pictures of birds. When you see a bird on the wing, or perched upon a twig, the first thing that strikes you is its *color*. This is particularly the case with such brilliant birds as the Scarlet Tanager, which glows as it flits among the green leaves like a ball of fire. When we show you a picture of this bird, no matter how carefully it is drawn and engraved, you see only black and white, and it does not bring the brilliant Tanager to your mind at all. But you must recollect that color is only one of the marks by which birds are known, and one of the least constant. Birds change their plumage with age, and with the season; while the sexes, male and female, are

would have a quite brilliant display of colors: red, black, yellow, white, and various shades of brown, would catch the eye at once. The bird most prominent in the picture is one of the best known in nearly all parts of the country. If its breast were red, you would at once recognize the familiar Robin-red-breast. Our Robin is a very different bird from the English Robin, and is not very closely related. When our ancestors came to this country, they gave to the plants, the birds, etc., that most resembled those they had left at home, the familiar home names, and gave that of Robin-red-breast to a bird about twice the size of the English Robin. If the Robin could write or speak, what an account he would give of us "featherless bipeds." It would run something after this style: "These animals called men, who are born without feathers, and are obliged to rob the poor sheep to keep themselves warm, are very glad to see us in early spring; they praise our song, and allow us to come upon the trees about their houses because we take the caterpillars to feed our young; they let us follow the plow, for we pick up lots of grubs and worms, and they only praise us during the spring months. They print in their papers that each one of us destroys a worm every 2 1/6 minutes; and sometimes tell how far the worms, put end to end, would reach, that we require to rear a nest of young. We are very lovely birds until cherries are ripe; but then, if after working hard all the spring months to

family with the common Robin, but to the Finches. Its common name in some parts is "Towhee Bunting," and in others, "Chewink." It is common in most of the Eastern States; its colors are very distinct, being mainly black and white, with some chestnut-brown on the sides. It builds its rude nest on the ground, and is essentially a ground bird. The note of the male is *low-he'e'che'de*, which he gives out as a warning when the nest is approached. The Cow-bird, or Cow Blackbird, the one that appears in the center upon a branch, and in a fluttered state, is not a very pleasing bird. Its general color is shiny black and purplish-brown, and is often to be seen in pastures with cattle, following them closely that it may get at the insects as the cattle eat away the grass. This is a mean and lazy bird, building no nest of its own, but dropping its egg in the nest of some other bird, usually that of an innocent Warbler, which poor creature hatches out the Cow-bird with her own young, and the intruder often grows so fast as to crowd the rightful owners out of the nest. The bird at the upper right-hand part of the picture is one of the numerous Warblers, the "Magnolia Warbler," or "Black and Yellow Warbler." It is well marked by its yellow breast streaked with black. The little fellow, looking in from above, is "Blackburn's," or the "Hemlock Warbler," and is the most beautiful of all the Warblers, on account of the intense orange or flame-color of its throat; the back and crown being black.

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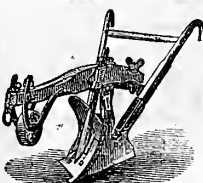
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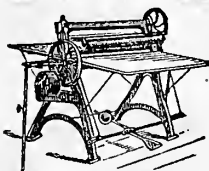
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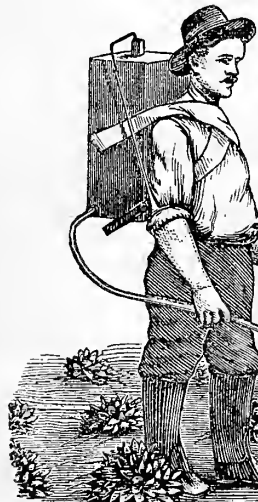
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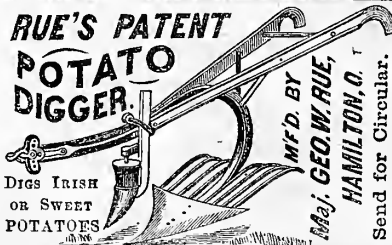
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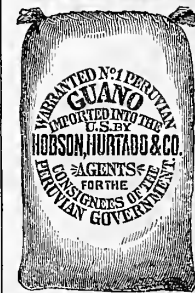
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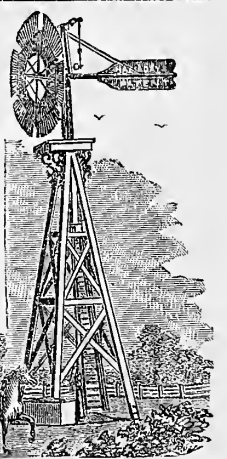
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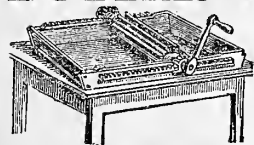
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Made of the best material and warranted perfect in every respect. Sent on receipt of \$3.50.
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The LANCASTER BUTTER CARRIER,
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Can now furnish Initial Stamps for printing butter, any Initial or initials to order. Sent by mail. Prices and circulars on application.
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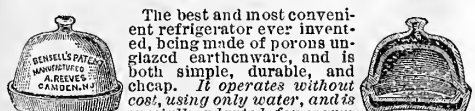
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The most effective, simple and convenient yet invented. Works 30 lbs. in less than 5 minutes, thoroughly working out butter milk and mixing the salt. AGENTS WANTED. Send for circular.

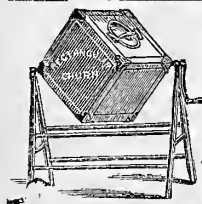
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Simple, efficient, and always reliable. No inside fixtures. Fifty per cent in labor saved over any other churn. Five sizes made. The Highest award given over all competitors at the late Dairy fair in Chicago. An energetic man wanted in every town, to act as agent. One churn sent at wholesale where we have no agent.
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We guarantee it the best and cheapest Machine in the world. No hard labor. Mixes the salt thoroughly, and takes all the milk out, with five to ten minutes work. Circulars sent on receipt of stamp.

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Made to sell at Highest Price; will take Premiums. Dairy Receipt-Book free. Address, Mrs. B. SMITH, P.O. Box 1934, 12 N. Fourth St., Philadelphia, Pa.

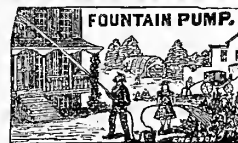
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GENERAL COMMISSION MERCHANTS,
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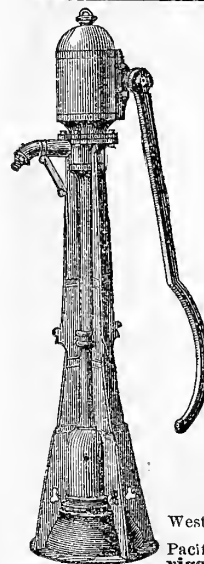
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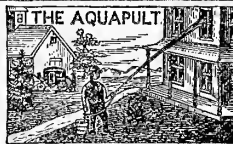
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Secured by letters patent. These pumps have enormous power, and are for the house or for out-door wells of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be removed, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers, a complete protection against sand or gritty water in dug or driven wells, pits, mines, and rivers. For hand or steam pumps, all sizes, from 1 1/2-inch to 4-inch suction pipe.

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Western Agency, Chas. W. Newton,
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Pacific Coast Agency, Dunham, Carigan & Co., San Francisco, Cal.



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"THE AQUAPULT," a new and greatly improved Fire-Extinguisher, Garden Engine, Window and Carriage Washer, Tree, Vine, and Shrub Protector from insects, etc., for starting Aqueducts, and various uses which readily suggest themselves. No Dwelling, Factory, Railroad Station or Wooden Railroad Bridge or Viaduct should be without one of these valuable articles. Weight, with hose, 5 lbs.; throws water 50 feet. Price, \$3.00 each, sent by express, C.O.D. Manufactured by W. & B. DOUGLAS, Middletown, Ct., the oldest and most extensive manufacturers of Pumps in the world. Branch Warehouses, 85 and 87 John St., New York; 197 Lake St., Chicago, Ill.

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We send by mail, postage paid, a one-blade boy's knife, razor steel, for 25c.; heavy one-blade knife, 4-inch, 50c.; a two-blade knife 50c.; heavy 2-blade knife, 60c.; extra thick 2-blade knife, 75c.; ebony handle, 3-blade, \$1; ivory handle, 3-blade, \$1.25; ladies pen-knives 25 to 75 cents; Razor Steel Pruning knife, 75c. to \$1. Our goods are hand-forged from best razor steel, and every blade warranted; we will exchange any found soft or faulty. We aim to build up a permanent trade. MAHER & GROSH, Cutlery, Toledo, O.

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SECURED BY USING

THE RUBBER CUSHIONED AXLE.

It lessens vibration, jolting, and pounding; stops splitting of hubs and spokes, and breaking of rims and tires; prevents crystallization of all the metal parts; relieves the vehicle from undue strain when meeting obstructions or passing over uneven surfaces; assures accuracy and precision in the movement of the wheels; muffles noise and rattle; prevents violent dilation of the springs, thereby lessening motion; possesses special advantages for invalids or delicate persons: reduces wear and tear to a minimum.

AND MARKS

a stride, the greatest ever made, towards perfecting wheeled vehicles.

Can be applied by any builder to old work as well as new. Correspondence solicited.

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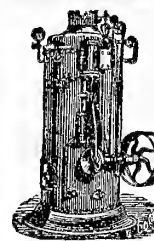
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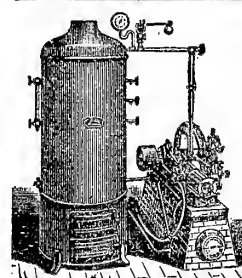


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Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

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Put on Cars at Springfield, Ohio.
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For Farmers, Machinists, Printers, and all requiring Light Power.

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Cotton Seed Huller AND FEED-MILL COMBINED.

For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Send for Circulars and Judges Report. Pay for itself in a few weeks.
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The Best Fanning Mill in the World.

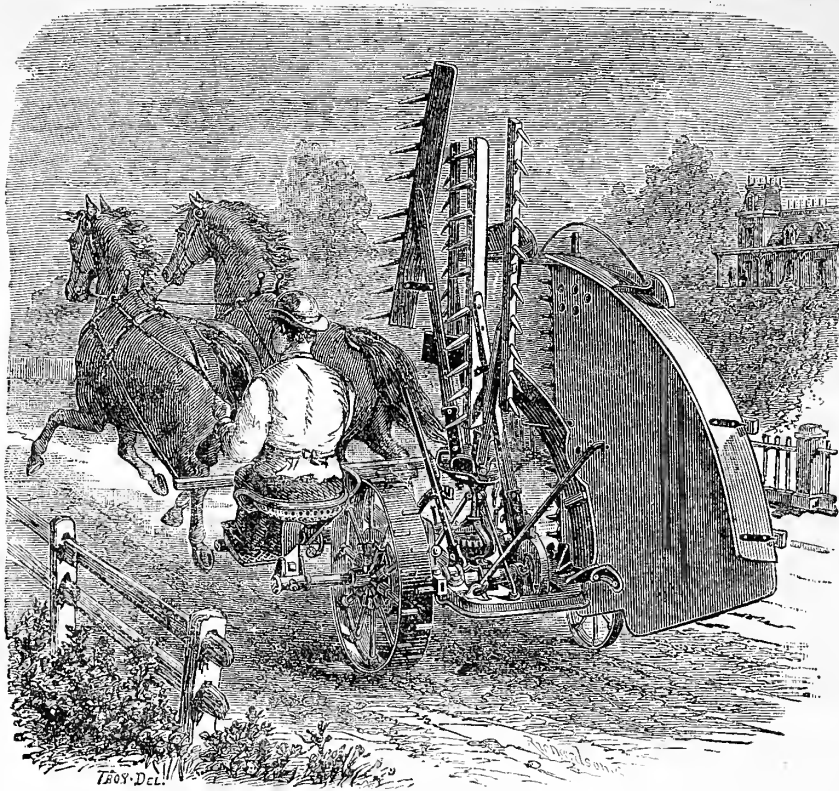
BUY THE
A. P. DICKEY
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No good Farmer can afford to market dirty grain. A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

Address A. P. DICKEY, Racine, Wis.
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TUBULAR BOW SOCKETS FOR TOP BUGGIES



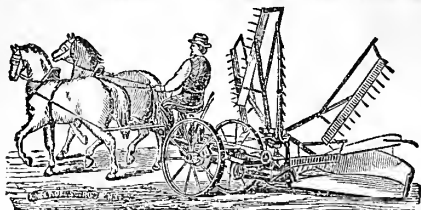
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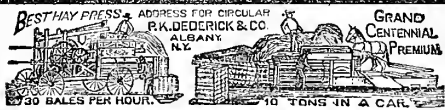
Manufacturers of Buckeye Mowers and Reapers, and the Adriaance Reaper,
165 Greenwich St. (near Courtlandt St.), N. Y. Manufactory, Poughkeepsie, N. Y.

The ADRIANCE is a light, strong, simple, efficient REAPER, which will work well in all kinds and conditions of grain, and combines more good points than can be found in any other. It has a folding platform, and is in all respects worthy to rank with the Buckeye Mower.

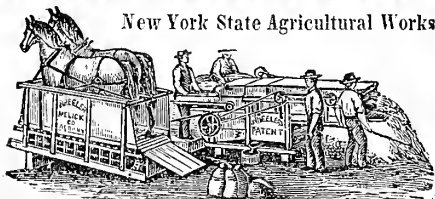
The BUCKEYE has for 21 years held its position as the LEADING MOWER and REAPER of THE WORLD, because it is superior to all others in the principles of its construction. It is the only machine which has given entire satisfaction to the farmer; its AVERAGE DURABILITY has been MORE THAN DOUBLE that of others, and the COST OF KEEPING IT IN REPAIR LESS THAN ONE-HALF.—Prices Reduced to the lowest point at which the high standard of excellence in material and workmanship can be maintained. Descriptive Circulars forwarded by mail.

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Manufacturers of
Self Raking Reapers, Combined Machines,
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Send for Catalogue. Brockport, N. Y.

**MEDAL MACHINES.**

New York State Agricultural Works.



First Premiums at all Competitive Trials.
Railway, Chain and Lever Horse Powers,
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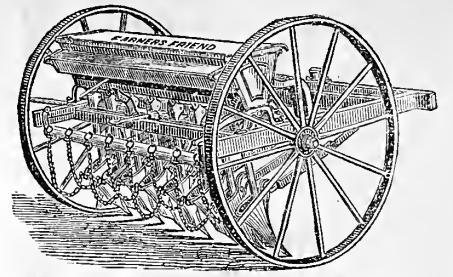
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Cheapest and best for all pur-
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Feeds
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Works,
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Lightest draft,
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simplest, most
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and perfect in
use. Wastes
grain, cleans it
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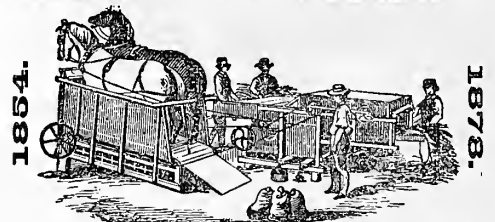
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Address A. B. Farquhar, York, Pa.**Farmers Friend Grain****And Fertilizer Drill.**

The quantity is regulated with gear-wheels in a CONE,
and controlled by a Lever, so there are no loose
wheels or movable feeders, and it will sow any grain
perfectly and accurately.

It has the best Spring Hoe, and every Drill has a
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Full Centennial Report, sent on application. Agents
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FARMERS' FRIEND MANUF'G CO.,
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The Peerless Thresher and Cleaner—Clover
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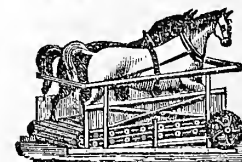


The only Threshing Machine that received
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Makers of the Original and only Genuine "Vibrator"
Threshers, Mounted Horse Powers, Steam
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HORSE POWER
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This power produces
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HEEBNER'S HORSE POWER

WITH PATENT LEVEL TREAD

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Heebner's Improved Threshing Machines. Send for Illus-
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**Genuine Jewelry, Watches, Dia-
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in gold of 14 carats and upward. No deception in quality or
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H. N. SQUIRES, 97 Fulton St. N. Y. City.

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NOW IN PRESS.

Winter Greeneries at Home.

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FINELY ILLUSTRATED. 12mo. PRICE, POST-PAID, \$1.00.

This work differs from most other works on winter gardening in giving the results of actual practice. The title Winter Greeneries better expresses the scope of the work than would that of Window Gardening. All can make their rooms cheerful with green, while to successfully cultivate

many flowers requires more skill than the majority of people possess; still flowers are not omitted. A small but judicious selection of easily-procured and easily-managed plants is given, with which to enliven the greenery.

House Plans for Everybody.

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PROFUSELY ILLUSTRATED. 12mo. PRICE, POST-PAID, \$1.50.

This is a valuable work which meets the wants of persons of moderate means, and we predict that it will prove one of the most popular architectural books ever issued. It gives a wide range of design from a dwelling costing \$250 up to \$3,000, and adapted to farm, village, and town residences. Nearly all of these plans have been tested by practical workings. They provide for heating, ventilation, etc., and give a large share of what are called Modern Improvements.

One feature of the work gives it a value over any similar publications of the kind that we have seen. It gives an estimate of the quantity of every article used in the construction, and the cost of each material at the time the building was erected, or the design made. Even if prices vary from time to time, one can, from these data, ascertain within a few dollars, the probable cost of constructing any one of the buildings here presented.

TALKS ON MANURES.

By JOSEPH HARRIS, M. S.,

Of Moreton Farm, Rochester, New York. Author of "Walks and Talks on the Farm," "Talks on Farm Crops," "Harris on the Pig," etc.

12mo. PRICE, POST-PAID, \$1.50.

In the present work Mr. Harris continues the talking style which he has made entirely his own in agricultural teachings. He also continues our acquaintance with the "Deacon," the "Doctor," and the "Squire," and others of his neighbors who have been made, through the medium of these Talks, almost as well known as the author himself. While we have no lack of treatises upon artificial fertilizers, we know of no recent work in which the main stay of the farm—the manure made upon the farm—is treated at all satisfactorily or thoroughly. If this work should do nothing more than convince farmers throughout the country that the value of manure depends upon the quality of the food they feed, rather than upon the kind of animal that eats it, it will accomplish much.

But it does a great deal more than this; starting with the question,

"What Is Manure?"

It runs through in sufficient detail every source of manure on the farm, discussing the methods of making rich manure; the proper keeping and applying it, and especially the

Uses of Manure,

and the effects of different artificial fertilizers, as compared with farm-yard manure, upon different crops. In this the author makes free use of the remarkable series of experiments instituted years ago, and still continued, by Lawes and Gilbert, of Rothamsted, Eng. The

Remarkable Tables

In which the results of these experiments are given, are here for the first time made accessible to the American farmer. In fact, there is scarcely any point relating to fertilizing the soil, including the suitable manures for special crops, that is not treated, and while the teachings are founded upon the most elaborate scientific researches, they are so far divested of the technical language of science as to commend themselves to farmers as "practical" and inhospitable to science as the Deacon himself. The book should have a hearty welcome from every farmer, except the fortunate few who cultivate soils, the natural fertility of which is not yet exhausted.



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 247.

Tumor on Cow.—"H. L. W.," Sandy Hook, Ct. The "bunch on the cow's belly" is probably an abscess, in which case it should be poulticed, and opened when it points. It may, however, be due to an entirely different and much more serious cause. You had best have it examined by a competent veterinary surgeon.

Alsike Clover.—"F. R. G.," Waynesboro, Ohio. Alsike clover may be sown in the same manner as common red clover. It is late in blossoming, so that it is ready for cutting with timothy, which is an advantage. It also succeeds best on moist ground, where red clover is often winter-killed. But we have not yet heard of a case where those who have tried it prefer it to red clover.

Loss of Feathers.—"D.," Poultry will frequently drop their feathers when over-fed upon corn, buckwheat, or other heating food. The remedy is to feed only chopped cabbage or turnips, or turn them into a grass field for a few days. A few pills of castile soap, or half a teaspoonful of castor oil, will be of benefit.

Death of Sheep.—"H. D. G.," Bremer Co., Iowa. When a sheep is poisoned, convulsions—a symptom of disease of the brain or spinal cord—rarely ensue. In examining a dead animal for the cause of death, the brain should be looked to, especially when the animal is convulsed or turns up the eyes forcibly. The skull should be sawn through around it on a line with the ears, and the top carefully removed. In your case, when no symptom but convulsions were noticed, the presence of parasites in the brain might be suspected, and the trouble was probably incurable.

Patent Fences.—"G. N. S.," Jersey Co., Ill. A patent may be taken, or at least they are taken, for inventions that have been in use for some years. The patent, when granted, is in force, and valid until upset by legal process, although it is one that might turn out to be void for want of some vital element in the application. Generally inventors deserve something for their labor, and although the invention may seem a simple thing, yet if it is worth making use of, it ought to be worth the cost of a trifling fee.

Have Patience!—"J. G. R.," and others. It is frequently impossible that we can procure illustrations of things requested, or even give replies to enquiries on the instant. Sometimes much study is required to answer what may seem a very simple request; and sometimes from necessity, a reply to a query, although in print, may lay over for a month. But, sooner or later, every inquiry or request is attended to.

Feeding Cotton-Seed.—"C.," The husk of cotton-seed is very hard and woody, and the lint which adheres to it is injurious to the stock, as it sometimes gathers in balls in the stomach, and often causes fatal inflammation. If fed at all, it should be thoroughly well boiled until soft, and then mashed and given with oat-chaff or cut hay. It is best to feed only the cake as it comes from the oil-mills free from the husks.

Remedy for Broken Wind in Horses.—"H. H. F.," Somerset Co., Pa. Broken wind consists of a violent breathing, with wheezing after severe exertion. It is caused by a permanent thickening of the lining membrane of the bronchial tubes, and is therefore incurable. All that can be done to ease it, is to feed lightly; to be careful against distending the stomach with water or food, and to avoid unusual exertion. Arsenic, in daily 5-grain doses, has been given with benefit. It is continued for several days, then suspended for a time, and afterwards repeated. This dose should only be given under the supervision of a competent surgeon.

Pigs that Won't Eat.—"J. C. J.," Bangor, Iowa. It is rarely that pigs will refuse corn-meal mush, bran, or middlings. A good method of preparing these feeds is as follows: Procure a large barrel, and throw a bushel of corn-meal, bran, and middlings in equal parts into it. Fill the barrel with water, throw in a few handfuls of salt, and stir the whole; leave it to ferment and become slightly sour, then feed. As soon as one barrel-ful is ready, prepare another, and so on, using them alternately. Milk or slops may be used with the water.

Any of these three books will be sent post-paid on receipt of the price.

Orders from the trade will be supplied in succession as received.

ORANGE JUDD COMPANY, 245 Broadway, New York.

Treatment for Chicken-Cholera.—"E. R.," Dayton, Ohio. As soon as fowls are seen to void a greasy liquid which smells badly, they should be given some condiment, as pepper, etc., which will soon set them right, unless their food, water, and roosting places are unclean and unwholesome. We find the "Imperial egg food," given twice a week, at the rate of a tablespoonful to a dozen fowls, to be an excellent preventive of disease, and to help in the production of eggs.

Pens at Paris.—As Joseph Gillott & Sons' pens are everywhere, they are, of course, at the "Exposition of '78" at Paris. While making a splendid display of their varied styles of pens, Messrs. Gillott have undertaken to illustrate Richelieu's well known saying, "The pen is mightier than the sword," by presenting a pen which, with its holder, is six feet long. Both pen and holder, which is of the choicest woods, are mentioned as remarkable works of art.

Various Kinds of Cultivators.—"J. M. B.," Elizabethtown, Ind. For the cultivation of vegetables, small fruits, and field crops grown in drills, we find Rue's hand-cultivator, which has several kinds of scrapers, teeth, and plows, for different operations, to be a very good one. It was fully described in the *American Agriculturist* of July, 1877. For cultivating potatoes, the writer uses a double mould-board plow, which earths up two rows upon one side at each passage, the horse walking between the rows.

Value of Potash.—"Z. M.," Queens Co., L. I. The cost of potash varies with the form in which it is sold. Sulphate of potash is higher in cost than the muriate, but still the sulphate is considered cheaper for root crops and fruits, on account of its action on the development of starch and sugar; while the muriate is just as good for grasses and grains. Unleached wood-ashes are worth, comparatively, 15 to 20 cts. per bushel.

Rye Among Corn. sown at the last hoeing, for plowing under the next spring, is a practice often adopted for the purpose of enriching the soil, and is a cheap and economical means to a desirable end. One and a half bushels of seed per acre are used.

Sowing Turnips.—"G. H. W.," Springfield, N. Y. To get a good crop of Swede turnips upon your acre of land, plow and harrow it fine; then with the plow open drills 27 inches apart; drop the 25 one-horse loads of manure in the drills, and cover it by plowing back the soil from each side. Smooth these ridges down by drawing a V shaped harrow lengthwise over them. With a hoe, open a shallow furrow for the seed, using about three pounds per acre. Then scatter along the furrow, upon both sides, about 300 pounds of fine bone-dust, or superphosphate of lime, and cover the seed with the mixed soil and fertilizer, burying the seed about one inch deep. When the plants appear above ground, thin them out to about a foot apart, keeping the rows free from weeds, and well cultivated.

Hay-tedders.—"P. & Sons," Boscobel, Wis. It will pay to use a hay-tedder where 40 acres of grass have to be cut. The cost is about \$50 or \$60, and hay can be cured with it in half the time required by hand.

Foul Sheath.—"J. W. S.," Henderson, Tenn.—This disease is generally the result of a poor condition, causing an increased and unhealthy exudation from the skin. Where this must necessarily accumulate, as in the sheath of a horse, its decomposition causes great irritation and discomfort, which affects the general health as well as the skin of the contained organ. The remedy is to examine the animal, using a soft cloth and a sponge, with warm, soapy water, to cleanse the parts. If the skin is injured, or any fungoid growths appear upon it, these should be touched with a solution of ten grains of sulphate of copper in one ounce of water, once a day until healed.

Clover in the South.—The report of the Georgia Agricultural Department is rarely without some valuable item of information. Recently we notice a statement to the effect that forty cases of hog cholera were averted, if not cured, by turning the animals on to a quarter of an acre of clover, to graze for one week. It has long been held that this disease springs mainly from mal-nutrition, and too much feeding on corn or other carbonaceous food. The fact that clover—a nitrogenous fodder—in this case averted the threatened disease is of great interest. The culture and use of clover in the South may through this knowledge be greatly extended.

Red Durhams.—"C. F. T.," Buckeys-town, Md. The so-called Durhams, or Shorthorns, properly speaking, are generally red, red and white in patches, roan, or white. The favorite color is a roan, which is

a mixture of red and white hairs, closely set together. That a Shorthorn is entirely red is not to be taken as an indication that there is Devon blood in the animal. A distinguishing mark of a Devon is the long, spreading horns; while a Shorthorn has short, neatly-curved horns. Red Shorthorns have a richer, purer red than the Devon.

Treatment of Heaves.—"T. S.," Pulaski Co., Ind. Heaves is often an hereditary or constitutional disease, depending upon a narrow and ill-formed chest; at other times it results from nerve weakness, and from indigestion, or it may be a result of all three combined. It is, therefore, seldom successfully treated by medicine. The course usually followed with success is to give moist, cut feed; but little corn, feeding crushed oats chiefly, in its place; to give with the feed four drams of sulphate of iron, with an equal quantity of ground gentian root, and to be careful not to overload the stomach with either food or water.

Sportsmen will find in "Hallock's American Club List and Sportsmen's Glossary" a complete list of the Angling, Athletic, Hunting, Kennel, Rifle, and Associations of similar character in this country; with forms of organization, rules of practice, and a glossary of technical terms; all very useful to members of such societies, and especially to those about to organize. For sale at this office; price 50 cents.

Green Rye for Pasture.—"J. W. A.," Lecmon, Mo. We have no reason to believe that green rye, when pastured, is injurious to hogs, or to any other stock. Some persons who have made complaints of it, we know to be fussy people who are in the habit of changing their minds frequently, and who are full of whims; some such complaints have been published in one or two papers, but we have no confidence in them.

Sugar Beets.—"A. B. O.," Clare Co., Mich. A dark, rich, sandy loam, will produce a good crop of sugar beets. The best variety for stock food is Lane's Imperial Beet, grown by Hon. Henry Lane, of Cornwall, Vt., which has yielded 48 tons per acre.

"One Hundred Architectural Designs," is a book from A. J. Bicknell & Co., which contains in 70 pages all these designs for country houses, city houses, stores, churches, stables, summer houses, interiors, etc., etc. Many of them have specifications and estimates of cost. The work is a collection of the best designs from a large number of works, and offers one desiring to build a rich variety to select from. Price, \$1, sent postpaid from this office.

Castor Bean Pomace.—"H. J. S.," Natick, Mass. For winter rye, or wheat, use about 400 lbs. per acre. All fine manures should be kept as near the surface as possible; would only harrow it in. When used for top-dressing, it should be mixed with loam or muck, allowing, say 300 lbs. of the pomace per acre. We would compost all such material with muck, stable-manure, or loam, that it might become thoroughly decomposed, and available for plant-food. If well covered with earth, it will thus keep uninjured for an indefinite period.

Milk from a Heifer.—"A Subscriber." It is not only possible, but easy, to bring a heifer, that has not yet had a calf, or that has not even been bred to a bull, into milk. All that is necessary is to excite the lacteal organs by permitting a calf to suck, or by the action of milking with the hands or fingers. We have seen two virgin heifers taking their place among the cows in a dairy, to be milked twice a day, and one of them gave 4 quarts a day at 14 months of age.

Improved Demand for Devon Cattle.—The New Herd Book.—H. M. Sessions, of South Wilbraham, Mass., writes us that the demand for Devons the past six months is greater than for the three years previous. The inquiries come from all parts of the country. Pedigrees for the 5th volume of the "Devon Herd Book" are now being received, and as soon as one thousand entries are made, the volume will be published. Mr. Sessions' herd now consists of 42 head, after having sold 20 in the past few months.

Yorkshire Swine Record.—"G. G. C.," Hamilton (?). There is no record of Yorkshire swine. Had you given the locality of your town, this reply would have been sent by postal card.

Red-water in a Calf.—"J. A. Q.," Closter, N. J. Raw flour in the drink is not wholesome for a calf; it irritates the intestines, and may be the cause of the red-water. In this case we would give two ounces of Epsom salts, repeating it the second day, and some thin, well boiled oat-meal gruel for drink. If the trouble is not removed, give a quarter of an ounce of hy-

posulphite of soda, daily, for a week, and give linseed-gruel in place of the oat-meal. Feed her no musty hay.

Indigestion in Sheep.—"J. H. H.," Northfield, Conn. An inclination to stretch itself, and stand with the fore and hind legs apart, is a symptom of indigestion in a sheep. The remedy is to give half a pint of raw linseed-oil, and a handful of salt to lick every day. When a sheep of a flock dies, it is best to examine the carcass, and discover the cause of the sickness, or at least be able to give some information upon which advice may be sought. The best book upon sheep raising is Stewart's "Shepherd's Manual," price \$1.50 by mail.

Treatment of Tanner's Refuse.—"C. L. M.," Fort Plain, N. Y., and "J. M. Y.," Saratoga Co., N. Y. Tanner's refuse, which consists of scraps of hide, hair, and lime, should be composted with stable-manure, or else spread upon the ground and lightly plowed in. When brought into contact with the moist warm soil, the hair rots very quickly. The whole requires heat, moisture, and time, to decompose. When using this matter we have mixed it with the manure in turning over the heap during the winter, and have found it ready for use in the spring for the corn crop.

Cheap Steamer for Cooking Feed.—"C. J. B.," Norfolk, Va. Descriptions with illustrations, of cheap cooking apparatus, are given in the *American Agriculturist* for November, 1874. These numbers can be had for 15 cents each.

To Preserve Harness from Rats.—"A. C.," Kane Co., Ill. The water-proof dressing, known as the "Tunyoap Water-tight," is said by its manufacturers to make harness that is dressed with it distasteful to rats and mice. As we have found on trial that the claims as to its water-proof qualities are justified, we infer the claim as to its protection of leather dressed with it, against vermin, is also well founded.

"Crackers for Horses."—"J. A. S." Had you given your Post-Office, instead of County, we should have long ago dropped a note saying that we know nothing of the matter beyond what was given.

To Hoist a Wagon-body.—"A Subscriber," Newton, N. J. The easiest way to hoist a wagon-body, is to have two strong hooks in the beam of the shed over the place for the wagon, and to suspend to each hook a block and tackle. Each end of the wagon box may be hooked to the tackle and hoisted, a few feet at a time, alternately, until it is out of the way. Or two pulleys may be hung to the beams, on swivels, and two ropes passed over these hooked to the ends of the wagon-box. The ropes may then be wound up by an axle and winch, fastened to the side of the shed, until the box is raised sufficiently.

Sheep Ticks.—"R. M. H.," Troy, N. Y. Where there is only a small flock, it is easy to hand-pick the ticks. To do this, the sheep is taken in front of the operator, who stoops over it and opens the wool; when a tick is seen, it is quickly snipped in two with a pair of short scissors; the eggs or pupæ are also killed in the same way. We have easily gone through with fifty sheep in this way, in half a day. It is not necessary to provide dipping apparatus for a small flock.

Oats and Peas.—"G. W. J.," Memphis, Tenn. The pea, in the mixed crop of oats and peas which is usually sown in the Northern States, is a true pea related to the garden pea, not the Stock or Cow-pea of the South, which is nearer a bean than a pea. The former pea climbs the oats, and is held up from the soil. The cow-pea, on the contrary, would not do this, but would spread over the ground.

Japanese Persimmon.—"J. B. B." We think that this would succeed in Kentucky, unless in an unusually exposed locality.

Value of Eggs.—As a hen may be expected to lay about 12 dozen of eggs, weighing 18 pounds, and to consume 60 pounds of corn in the year, it follows that for each pound of eggs, $\frac{2}{3}$ pounds of corn are used. There is no other animal product afforded so cheaply. Five pounds of corn costs now about 6 cents, and a dozen eggs, which are the product of that quantity of corn, are worth on an average during the year 20 cents. A brood of 10 chicks may be brought to a weight of 2 lbs. each upon a bushel of mixed corn and wheat, so that 20 lbs. of live weight can be produced from 60 lbs. of grain. There is then no more profitable farm stock than poultry.

Improvement of the Southern Levees.—"W. L. S.," Black Hawk, La., gives the fol-

lowing pertinent statement as to the loss caused by ineffective levees in the Southern States. "He lives on a plantation that would produce 500 to 600 bales of cotton if the levees were perfect, but in their present imperfect condition only 200 to 300 bales can be produced. If this loss occurs upon one plantation, what is the total loss in the whole of the river country? The question thus becomes one of more than individual importance; it is of great national interest.

"William Cullen Bryant, born Nov. 3d, 1794; died June 12th, 1878," was the simple inscription upon the coffin of one whose long life has been eulogized wherever the English language is spoken. Other journals have discussed his relations as poet, journalist, politician, etc. We record his death as one of our most intelligent horticulturists, and as one who, born amidst rural surroundings, never lost his love for country life, and who found in the forests and the flower themes for his most enduring poems. While he is claimed as a bright example in other pursuits, we record our high esteem of him as a lover of nature, whether manifested in the more artificial products of the garden and orchard, or in those of the woods and fields.

SHOW-BILLS for FAIRS.—Much of the success of Agricultural, as well as other Exhibitions, depends upon bringing them to the attention of the people attractively. A neat, speaking show-bill is effective for this. Officers of Agricultural Societies who may wish fine appropriate engravings for such bills, can obtain, at low rates, a selection from the largest and best assortment in this country, of Animals, Plants, Machinery, etc., etc., by addressing the publishers of the *American Agriculturist*. The back volumes of the paper will serve as a guide for selection.

Sowing Hungarian Grass.—"A. G. M." Shenandoah Co., Va. Hungarian grass is generally sown broadcast. The seed is very small, and half a bushel to three pecks per acre is sufficient. We know of no good reason why it may not be sown with a drill along with a sufficient quantity of artificial fertilizer, unless it may be that the operation would be longer and the seed deposited deeper than if sown broadcast. This crop should not be sown until the soil is thoroughly warm, and all danger of cold rains has passed. When sown broadcast, apply 200 lbs. per acre of some artificial fertilizer on the surface, after the seed has been sown upon the newly harrowed soil.

Price of Thorough-bred Cattle.—"S. K." Cattle of the pure breeds are valued at all ranges of prices from \$100 up to \$50,000, according to their character for fancy points, or the consideration in which their owners hold them. Fair useful cows can be purchased for \$200 to \$300, and bulls for \$100 to \$250.

Sowing Grass in Woodland.—"B. P. W." Raleigh, N. C. There are many opportunities of providing valuable pasture lots by seeding wood-lots down to grass. If the undergrowth and rubbish are removed, and the ground lightly broken up with the plow and harrow, it may be seeded without difficulty. Orchard grass, and Kentucky blue-grass, thrive best under timber. A bushel of each may be sown per acre.

Wheat in South Australia.—The following statistics of the wheat-crop in South Australia, will not only give interesting information regarding the agriculture of this British Colony, but will also tend to show that the low average of the American crop is even surpassed in lowness by that of Australia. The figures for the past four crops are as follows:

Year.	Acres in Wheat.	Produce bush.	Average per Acre.	Price per bush.
1873-4	784,784	6,178,816	7.62/100 bus.	\$1.39
1874-5	839,633	9,869,963	11.46/100 "	1.13
1875-6	898,830	10,739,834	11.97/100 "	1.25
1876-7	1,083,732	5,857,569	5.24/100 "	1.50

The Australian farmer can by no means rejoice over his American brother; on the contrary, the latter may congratulate himself that he is not the only, nor the worst sufferer, from small wheat-crops.

Bullet in Horse's Thigh.—"W. L." Crockett, Tex. To effect a cure of a wound caused by a rifle shot, the ball must be extracted, which can only be done by a surgeon. You had best call the ablest one in your neighborhood. Cast and confine the horse for him, and let him operate as if the patient were a man.

Artesian Wells.—"J. L. B." Grant Co., W. Va. No one can say if an Artesian well can be procured except by testing the question by boring for the water. On examination of the locality, a competent geologist might give an opinion as to the probability of success, but no certain promise. For success, one must

strike a subterranean current which has its source above the level of the mouth of the well. To do this is not always possible, and rarely probable. The Driven Well is an excellent substitute for the Artesian, and will work in any locality where it can be put in without excavating boulders or ledges.

Production of the Best Cows.—"H." The best cows sold in the New York City markets, and quoted at the highest prices, viz., from \$60 to \$80, will give from 20 to 22 quarts daily.

Sanford Corn.—"R. D. B." Bedford Co., Va. We can not say where the Sanford corn, which is a kind very useful for fodder, can be procured. There have been many inquiries for it this season that we were unable to reply to, for the reason that those who have it neglected to advertise it.

To Rid a Barn of Rats.—"A Subscriber." The method is as follows: Procure several empty barrels, and put a quantity of bran or grain in them, and leave them for the rats to feed in without disturbance for a few days. Then remove the bran, and half fill the barrels with water, covering the surface with bran. The rats will go into the barrels without hesitation, and many will be caught. To prevent the increase of rats, avoid having any hiding places, leaving the floors open to the entrance of cats, raise all the sheds and buildings above ground on posts, and have no wooden floors.

Nuts and Nubbins.

The Virginia bell-punch is not a thermometer—it is more like a bar-room-meter.

It is said that sliding down hill was the direct cause of over six hundred deaths during the last winter. Moral—Always slide up hill.

Statistics show that the number of idiots is increasing; and yet some newspapers continue to make war on quack doctors. What is a quack doctor for but to kill off the fools?

A young man sent 60 cts. to a firm in Michigan that advertised a receipt to prevent bad dreams. He received a slip of paper, on which was written: "Don't go to sleep."

"I say, Jim, if five and a half rods make a perch, how many will make a pickerel?"—"You just tell me, first, if two hogheads make a pipe, how many will make a meerschaum?"

The manufacture of paper from wood has reached perfection in Canada. The superintendent of a mill up there says a tree is cut down and shoved into one end of the mill, and five minutes later there is a neighbor at the other end to borrow the paper.

Franky L. was told to watch a cow feeding on the Common. After a while his mother went out to see if her darling wanted relief, but the cow was nowhere in sight. "Why, Franky!" said she, "I thought I told you to watch the cow."—"And so I did, so long as she was in sight."

We have a bell in our private office. It is used to call one of our boys with. At least that is the popular legend connected with the article. When we want one of the boys we ring the bell, and then go out in the back office and hunt him up and tell him of the fact. It always pleases him to learn that we have been ringing.

A man saw a ghost, while walking along a lonely highway, at midnight. The ghost stood exactly in the middle of the road, and the wayfarer, deciding to investigate, poked at it with his umbrella. The next instant he was knocked twenty feet into a mud-hole. Moral—Never poke at a large white mule when its back is turned.

A Connecticut editor shows his familiarity with agriculture in the following: "T is wheat to n-oat the progress of the approach of spring. Onion-cer hills and meadows nature is bean arrayed in all herb beauty. The farmer manifests corn cider-apple zeal in his effort to secure early field crops, while the gardens, with t-hay-r-radish-ional work, are being carefully attended to."

A sharp trick for custom was played by two San Francisco hackmen the other night. As a theater audience was departing they stationed themselves at the door with large and open umbrellas. Without stopping to investigate, those who had umbrellas put them up, while those who had not put handkerchiefs over their heads and broke for the carriages, and the enterprising Jebus drove off with full fares.

The Need of Pronouncing Distinctly.—"Guest at Hotel."—I want to get up at eight o'clock.—"Hotel Clerk."—Want what, sir?—"Guest (emphatically)."—I want to get up at eight o'clock.—"Hotel Clerk."—We haven't any such thing in the house, sir!—"Guest (angrily)."—What do you mean, sir?—"Clerk."—I mean that we haven't any such thing in the house as a "potato-clock!"

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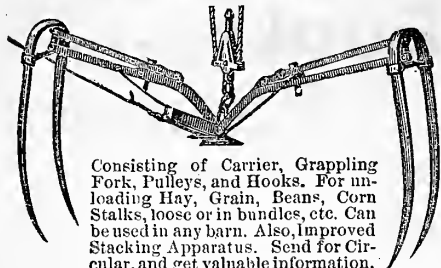
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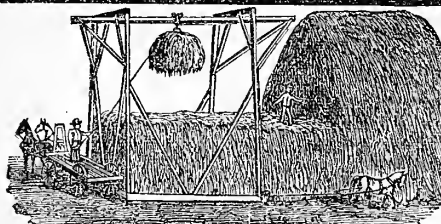
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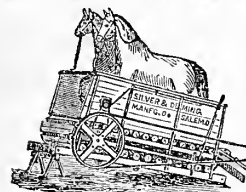
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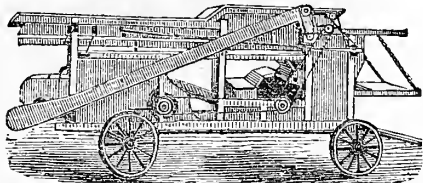
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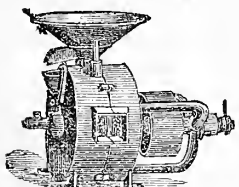
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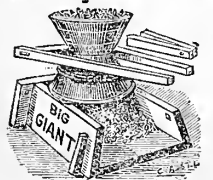


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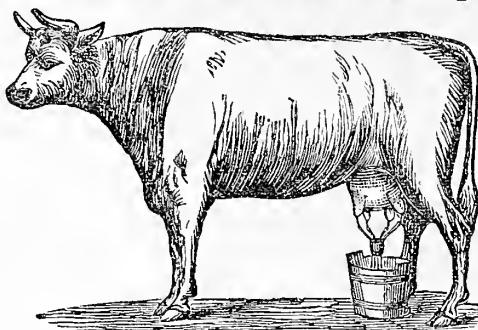
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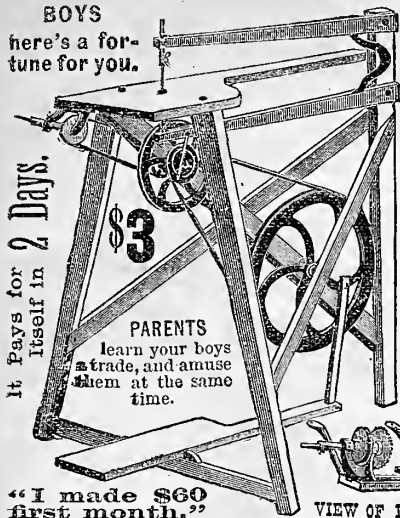
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Also, Improved *Yorkshire* and *Berkshire* Pigs, all ages.—Thoroughbred *Jersey* and *Ayrshire* Calves, "deep butter and milk strains," a specialty.—*Scotch Shepherd* and other Dogs, bred and for sale by FRANCIS MOLKIS, Philadelphia, Pa.

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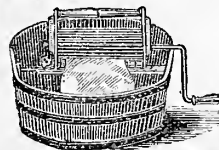
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No. 1 Machine, 60 Needle,	\$10.00,	formerly \$20.00.
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(Six extra needles sent with each machine.)

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Thousands of Them in Actual Use. They are a Perfect Success. Simple, Durable, and Cheap.

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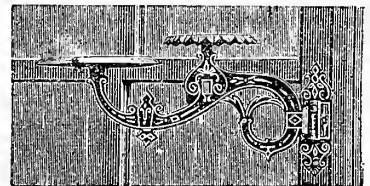
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A Valuable Work by Prof. Riley.

THE LOCUST PLAGUE IN THE UNITED STATES:

Being more particularly a treatise on the Rocky Mountain Locust, or so-called Grasshopper, as it occurs east of the Rocky Mountains. With practical recommendations for its destruction. By Prof. Charles V. Riley, State Entomologist of Missouri; Chief of the U. S. Entomological Commission; Author of "Potato Pests," etc. With 45 illustrations.
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By E. P. ROE,

Author of "Barriers Burned Away," etc.

NOTICES BY THE PRESS.

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This book is as poetical as it is practical. Still he is no dreamer. He goes into every essential detail with as much minuteness and precision as if he were writing a manual for the practical farmer. Indeed few works professedly devoted to agriculture give more sound and valuable information on the secret of winning golden harvests from the soil than this brief idyllic sketch. —*N. Y. Tribune.*

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As revised by the American Poultry Association at their Convention held in Chicago, giving a complete description of all the recognized varieties of thoroughbred fowl. This edition contains the latest appendix, and should be in the hands of every breeder of choice poultry.
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With the best Methods for Producing and Marketing it. By WILLIS P. HAZARD, President of the Chadd's Ford Farmers' Club, author of the "Jersey, Alderney, and Guernsey Cow," etc. Illustrated. 12mo. Paper cover. Price, post-paid, 25 cents.

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In June of 1872 we gave illustrations of a Trochar and Cannula to be used in ringing a bull, and on page 13 (January) and page 97 (March) of the *American Agriculturist* for 1873 (copies of which may be got from this office for 15 cents each) we described the use of this apparatus in relieving hoven in cattle. These articles have brought out a large demand for Trochars, and failing to find just the right kind among the makers of surgical implements, we have induced an establishment to undertake their manufacture. We give herewith a small engraving of the Trochar. These articles are now in the trade, and may be had of most dealers in agricultural implements. Those who can not get them from dealers can receive them from this office, prepaid, for \$1.00.
ORANGE JUDD COMPANY, 245 Broadway, N. Y.



Read What is Said Below About Books for Farmers.

In response to a request made of one whose thorough and practical knowledge on all matters pertaining to the Farm, Garden, and Household is so fully conceded that his opinions could not fail to secure attention and command respect were we permitted to give his name, we have received the following as his judgment concerning some of the works on our Catalogue of Books for Farmers.

Any of these Books will be forwarded, post-paid, to any address in the United States or Territories, on receipt of the price, by Orange Judd Company, 245 Broadway, New York.

For a Farmer's Home Library.

The New American Farm Book.

By R. L. and L. F. ALLEN.
Price \$2.50.

This is the best American work upon general farm management. It treats of the leading crops, buildings, draining, etc., and includes sufficient about animals of different kinds to meet the wants of most farmers.

Farm Implements and Machinery.

By JOHN J. THOMAS.
Price \$1.50.

Most farming operations are accomplished by force, applied through implements and machines, and a farmer should understand mechanics, at least sufficiently to apply force most economically. In this work the fundamental principles are clearly taught, and their application illustrated.

American Weeds and Useful Plants.

By DR. WM. DARLINGTON.
Price \$1.75.

For the farmer who wishes to know something about the weeds upon his farm, as well as useful cultivated and wild plants, this will answer better than a general treatise on botany.

How Crops Grow, (price \$2.00), and How Crops Feed, (price \$2.00.)

By Prof. SAM'L W. JOHNSON.

If I could have but two books in such a library it would be these, as I consider them the most important contributions to agricultural literature of modern times. They contain all of vegetable physiology and agricultural chemistry that any except special students need, and nowhere is there so much of agricultural condensed in so small a space. As works of reference they are indispensable.

Country and Suburb- an Homes.

By D. T. ATWOOD.
Price \$1.50.

Such a library should have some work on domestic architecture. Most works upon the subject are costly on account of the designs. This is one of the best works, at a moderate price, and contains, with other matter, the method of building with concrete.

The Fruit Garden.

By P. BARRY. Price \$2.50.

After the farm crops, fruit is of the most importance. No work covers the whole subject so completely as this.

Gardening for Profit.

By PETER HENDERSON.
Price \$1.50.

Farmers near cities often make more from garden crops than from farm crops. This is the best work on market gardening, and will serve for the family garden also.

Gardening for the South.

By WM. N. WHITE.
Price \$2.00.

An excellent garden book, and in the libraries for Southern farmers might be substituted for Henderson's, but it would be well to have both.

The New Book of Flowers.

By JOSEPH BRECK.
Price \$1.75.

I do not know of any book upon out-door flower gardening that on the whole is so good as this. Its teachings are sound, and style pleasing.

Mysteries of Bee- Keeping.

By M. QUINBY. Price \$1.50.

Practical Poultry- Keeper.

By L. WRIGHT. Price \$2.00.

Swine Husbandry.

By F. D. CORBURN.
Price \$1.75.

The Pig.

By JOSEPH HARRIS.
Price \$1.50.

Bees, Poultry, and Pigs are often made subjects of especial care by small farmers, and separate treatises on these are more likely to be asked for in a library like this than those upon the larger animals. Each of these stands in the front rank of books in its line.

Draining for Profit.

By GEO. E. WARING, JR.
Price \$1.50.

So in farm operations the work of Draining, important as it is in many cases, is not likely to be treated sufficiently in detail in general works.

Irrigation.

By HENRY STEWART.
Price \$1.50.

A most timely book, for inquiries are numerous upon this subject of "Irrigation for the Farm, Garden, and Orchard." This is plainly written and copiously illustrated; is thoroughly practical, and sufficiently suggestive to meet almost any possible case in which water may be used for the benefit of the crops. It is, in short, a practical manual of irrigation, which will be useful in a wide diversity of instances.

The Shepherd's Manual.

By HENRY STEWART.
Price \$1.50.

This work is regarded by competent judges as the most valuable production in the department of husbandry of which it treats. It is very fully illustrated, and is designed to be a help to every sheep owner, whether his flock be large or small.

Potato Pests.

By PROF. C. V. RILEY.
Price, paper covers, 50 cts.;
cloth, 75 cts.

No farmer can afford to be without this little book. It gives the most complete account of the Colorado Beetle anywhere to be found, and includes all the latest discoveries, as to the habits of the insect and the various means for its destruction. It is well illustrated, and exhibits in a map the spread of the insect since it left its native home.

Tim Bunker Papers.

Price \$1.50.

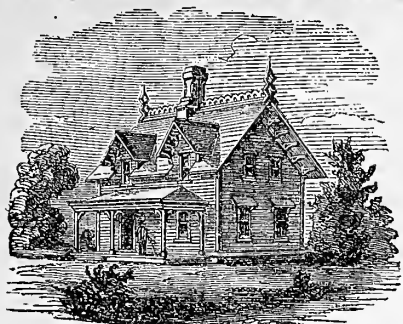
As all the other works are matters of fact, it may be well to have a little pleasure. This conveys much sound teaching on rural economy in a quaint style, and it is sometimes policy to sugar-coat your pill.

Books for a Larger Library.

Besides all the works in the foregoing list, I would add the following:

- American Cattle.** L. F. ALLEN. \$2.50.
- Randall's Sheep Husbandry.** \$1.50.
- Hints to Horse Keepers.** H. W. HERBERT. \$1.75.
- American Cattle Doctor.** 12mo. G. H. DADD. \$1.50.
- Modern Horse Doctor.** 12mo. G. H. DADD. \$1.50.
- Insects Injurious to Vegetation.** DR. HARRIS. \$4.00.
- Small Fruit Culturist.** A. S. FULLER. \$1.50.
- Draining for Profit and Draining for Health.** G. E. WARING, JR. \$1.50.
- Cranberry Culture.** J. J. WHITE. \$1.25.
- Grape Culturist.** A. S. FULLER. \$1.50.
- An Egg Farm.** STODDARD. Paper 50c.; cloth 75c.
- Hops.** 30 cts. **Flax.** 30 cts. **Tobacco.** 25 cts. **Onion.** 20 cts. Essays.
- Boussingault's Rural Economy.** \$1.60.
- Play and Profit in My Garden.** ROE. \$1.50.
- Landscape Gardening.** DOWNING. \$6.50.
- Gardening for Pleasure.** HENDERSON. \$1.50.
- The Book of Evergreens.** J. HOOPES. \$3.
- Farm Gardening & Seed Growing.** BRILL. \$1.
- Hunter and Trapper.** H. THRASHER. \$1.
- The Market Assistant.** DEVOE. \$2.50.
- Hedges and Evergreens.** WARDER. \$1.50.
- Pear Culture.** P. T. QUINN. \$1.
- Money in the Garden.** QUINN. \$1.50.
- Peach Culture.** FULTON. \$1.50.
- Broom-Corn and Brooms.** Pap. 50c. Cl. 75c.
- Caldwell's Agricultural Chemical Analysis.** \$2.00.
- Geyelin's Poultry Breeding.** \$1.25.
- Gregory on Cabbages.** 30c.
- Johnson's Agricultural Chemistry.** \$1.75.
- My Vineyard at Lakeview.** \$1.25.
- Nichol's Chemistry of the Farm and Sea.** \$1.25.
- Parsons on the Rose.** \$1.50.

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Atwood's Country and Suburban Houses.

This work is finely illustrated with about one hundred and fifty engravings, and gives instruction upon all points, from the selecting of a place to build, to the perfect completion of the house. By D. T. Atwood, Architect. Cloth, 12mo. Post-paid, \$1.50.

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It is EXTENSIVELY ILLUSTRATED, containing 42 Plates of Perspectives, with Plans of 45 Original Buildings, of as many classes, and their cost; and an INVALUABLE TABLE of materials, labor, and prices, at about 400 cities, towns, and hamlets, from the Atlantic to the Pacific. Also, complete and ELABORATE SPECIFICATIONS of materials and labor; merchandise, and where it may be procured. It also contains original descriptions and valuable statistics for 1876 of over 250 Cities and Towns. By E. C. Hussey, Architect, author of Hussey's National Cottage Architecture, &c. Post-paid, \$5.00.

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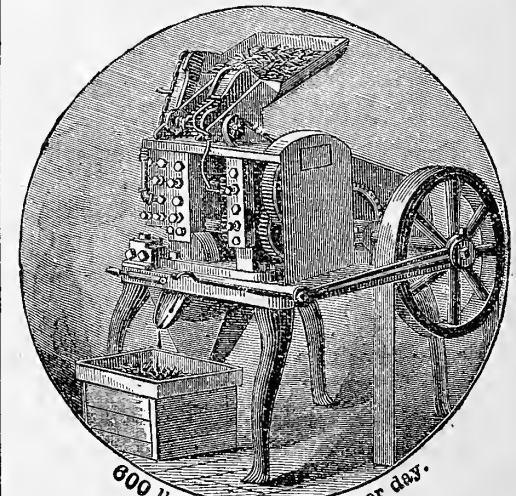
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XV.

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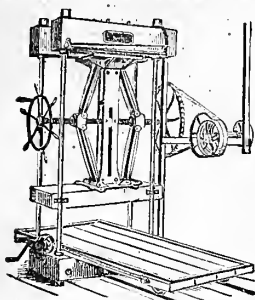
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Calendar for the Month.

Day of Month.	Day of Week.	Boston, N. Eng.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missour- i, and Cali- fornia.		
		Sun rises.	Sun sets.	Mon rises.	Sun rises.	Sun sets.	Mon rises.	Sun rises.	Sun sets.	Mon rises.
1	T	4:52	7:20	8:41	4:56	7:16	8:45	5:11	7:11	8:45
2	T	4:53	7:19	8:41	4:57	7:15	8:45	5:12	7:10	8:45
3	W	4:54	7:18	8:41	4:58	7:14	8:45	5:13	7:09	8:45
4	W	4:55	7:16	8:41	4:59	7:12	8:45	5:14	7:08	8:45
5	T	4:57	7:15	8:41	5:00	7:11	8:44	5:15	7:07	8:45
6	T	4:58	7:14	8:41	5:01	7:10	8:44	5:16	7:06	8:45
7	W	4:59	7:13	8:41	5:02	7:09	8:44	5:17	7:05	8:45
8	W	5:00	7:11	8:41	5:03	7:08	8:44	5:18	7:04	8:45
9	T	5:01	7:10	8:41	5:04	7:07	8:44	5:19	7:03	8:45
10	T	5:02	7:09	8:41	5:05	7:06	8:44	5:20	7:02	8:45
11	W	5:03	7:07	8:41	5:06	7:04	8:44	5:21	7:01	8:45
12	W	5:04	7:06	8:41	5:07	7:03	8:44	5:22	7:00	8:45
13	T	5:05	7:04	8:41	5:08	7:02	8:44	5:23	6:59	8:45
14	T	5:06	7:03	8:41	5:09	7:01	8:44	5:24	6:58	8:45
15	W	5:07	7:02	8:41	5:10	6:59	8:44	5:25	6:57	8:45
16	W	5:08	7:01	8:41	5:11	6:58	8:44	5:26	6:56	8:45
17	T	5:09	6:59	8:41	5:12	6:57	8:44	5:27	6:55	8:45
18	T	5:10	6:57	8:41	5:13	6:56	8:44	5:28	6:54	8:45
19	W	5:11	6:56	8:41	5:14	6:55	8:44	5:29	6:53	8:45
20	W	5:12	6:54	8:41	5:15	6:53	8:44	5:30	6:52	8:45
21	T	5:13	6:52	8:41	5:16	6:52	8:44	5:31	6:51	8:45
22	T	5:14	6:51	8:41	5:17	6:51	8:44	5:32	6:50	8:45
23	W	5:15	6:49	8:41	5:18	6:49	8:44	5:33	6:49	8:45
24	W	5:16	6:48	8:41	5:19	6:48	8:44	5:34	6:48	8:45
25	T	5:17	6:46	8:41	5:20	6:46	8:44	5:35	6:47	8:45
26	T	5:18	6:45	8:41	5:21	6:45	8:44	5:36	6:46	8:45
27	W	5:19	6:43	8:41	5:22	6:43	8:44	5:37	6:45	8:45
28	W	5:20	6:42	8:41	5:23	6:42	8:44	5:38	6:44	8:45
29	T	5:21	6:40	8:41	5:24	6:40	8:44	5:39	6:43	8:45
30	T	5:22	6:38	8:41	5:25	6:38	8:44	5:40	6:42	8:45
31	W	5:23	6:36	8:41	5:26	6:36	8:44	5:41	6:41	8:45

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'N.	STON.	CHICAGO.
1st Quart.	D. 5. 8 35 mo.	H. 8 23 mo.	H. 8 11 mo.	H. 7 59 mo.	H. 7 50 mo.	H. 7 29 mo.
Full M'n.	12 7 32 ev.	7 20 ev.	7 8 ev.	6 56 ev.	6 46 ev.	6 26 ev.
3d Quart.	20 11 24 ev.	11 12 ev.	11 0 ev.	10 48 ev.	10 38 ev.	10 13 ev.
New M'n.	28 1 15 mo.	1 3 mo.	0 51 mo.	0 39 mo.	0 9 mo.	

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Money Orders; or in Registered Letters, such letters to
have the money enclosed in the presence of the Postmaster,
and his receipt taken for it, and the postage and registering
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above three methods is safe against loss. Bound Volumes
from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$3.30 if to
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if new members begin at same date as original club.

**Every German Cultivator and Laborer
on the Farm, or in the Garden, OUGHT**
to have the German *American Agriculturist*, and thou-
sands of new subscribers are taking it this year. It

contains not only the Engravings and all the essential
reading matter of the American edition, but an additional
Special German Department, edited by the Hon. Frederick
Münch, of Missouri, a skillful and successful cultivator
and excellent writer. No other German Agricultural or
Horticultural Journal in America has been so long issued;
no other contains so much useful information and so many
engravings. Germans are a reading, thinking people,
and know how to make good use of what they read.
Many Americans supply it to their German laborers and
gardeners; all would find it pay to do so. — *Nothing*
else can compete with it in cheapness of price for the same
amount of material, engravings, etc., because the expense
of collecting and making these is largely borne by the
American edition, and no separate office or machinery is
required beyond German editors and the printers. Its
terms are the same as the American edition, singly and
in clubs; and clubs can be composed of subscribers for
either edition in whole, or in part. — *Please call the*
attention of your German neighbors to this paper. It will
*do much to help new comers to a knowledge of the sys-
tem and modes of culture used in this country.*

**Potato-Diggers, Flouring Mills, and all other
implements, will be found mentioned in our ad-
vertising columns, which may always be looked to as a
"Directory" for farm supplies, often at a great saving in
time and postage on the part of correspondents.**

Preserving Powders.—There are other chemical
compounds besides the *Chloride of Sodium*, or common
salt, which have the power of arresting decay in animal
and vegetable substances. For several years these have
been offered to the public for the preservation of fruits,
etc. When an advertisement of this kind is presented to
us, the first condition is, that we shall be informed of the
precise composition of the article. If we regard the com-
pound as a safe one, the advertisement is admitted. To
avoid answering special inquiries, we would say that so
far as regards the articles offered in former years, and
those advertised the present year, we have every reason
to believe that they may be employed for preserving pur-
poses, without impairing the safety as food of the articles
preserved by this agency.

A Blunder was made in the description of the
"Farmer's Friend Grain Drill" in the July number,
wherein it was stated that 'by a simple arrangement the
implement could be transformed into a wheat hoe. Al-
though we had not seen the attachment, we had under-
stood this to be one of its desirable features. Well, it
was our blunder, and so much the worse for the "Far-
mer's Friend;" but the manufacturers are honest, and
"do not want to make any misrepresentations."

Trouble with Specimens by Mail.—We
have heretofore called attention to the trouble we have
with plants, etc., sent us by mail. After exercising all
care, we still have several letters referring to specimens
which have not reached us, and a number of specimens
of plants, insects, etc., to which we have no clue. When
one has taken the pains to send a specimen by mail, it is
a fair indication that he really wishes to know something
about it, and we have every desire to gratify his wish;
but if three or four specimens of grasses, for example, as
sometimes happens, come in one day, and there is neither
postmark, nor sign, to tell to whom they belong, we are
quite unable to make them useful. By far the safest way
is to send specimens of moderate size in a letter; it
rarely occurs that the grass or other plant is large
enough to more than double the ordinary letter-postage,
and we are sure of its safe arrival (which, in the other
case, we are not), and of knowing from whom it comes.
... Some one in Minn., having a new raspberry, wishes
our opinion of it. It is just possible, that by great care a
perishable fruit like this might be sent so far by mail,
and arrive in fair order, but highly improbable. Our cor-
respondent wraps some berries in cotton, puts them in a
frail paper box, ties it with a string, and sends it. We
receive a crushed box, containing some matted cotton,

in which are imbedded some raspberry seeds. Not the slightest trace of a berry, except these seeds, and the jam. Had not the cotton fortunately absorbed the juice, the parcel would have been thrown out as injurious to other mail matter. It is not safe to send fruit, insects, or anything that can be crushed, in any other than wooden or tin boxes. We ask our friends, for their own sake, to endeavor that these specimens shall not only reach us in good order, but that they may be so marked that we can identify the owner. As it is, about half of those sent fail of their object through no fault of ours.

"The Sportsman's Library of Standard Works," is the title of a beautifully illustrated Catalogue, just issued by the Orange Judd Company. Some account is given of the various works on Hunting, Fishing, Shooting, Horses, Dogs, and also the popular works on Natural History of most interest to the sportsman. The engravings are abundant, and add much to the interest of the Catalogue, which is sent to any address for two 3-cent postage-stamps.

Cranberries.—"S. G. R.," Hion, N. Y. The requisites are a peat bog, an abundance of pure sand, and water under such control that it may be let off or on to the plantation as may be needed. "Cranberry Culture," by J. J. White, published by the Orange Judd Co. (\$1.25), gives every needed particular, and is by far the best guide that we know of.

Disease in Sheep.—"P.," Brunswick, Ga. A soft, loose swelling under the jaw in sheep is indicative of a dropsical effusion, caused by disease of the lungs or liver. It accompanies pleurisy and pneumonia, and is known as "liver rot." Alone, it is not sufficient to indicate fully the condition of the sheep, and no treatment can be suggested without further information. For full directions for determining the nature of the disease, and proper treatment, consult *Stewart's Shepherd's Manual*.

American Berkshire Record.—Pedigree goes for something either good or bad; and a record that shows a valued ancestry is a considerable item in the salable estimate of either a horse, a bull, a cow, or a pig. This fact has tended to the successful establishment of the Berkshire Swine Record, of which the third volume is now in course of preparation. Entries for this volume can be sent to P. M. Springer, Springfield, Ill., Secretary of the American Berkshire Association.

"Food from the Far West."—We do not know just where the "Far West" is, but an intelligent Scotchman, James Macdonald, has found it in Texas, Nebraska, Kansas, Iowa, and the neighboring States, and gives in a work with the above title the results of his observations during a protracted tour in our cattle-raising States. It is sometimes an advantage to have portions of our own country described by a stranger, as many points which an American regards as matters of course, strike him as novel and of interest, and if the writer from abroad be a good observer, he is likely to give us a fuller account than would an American describing the same territory. In the present book we find the whole subject of cattle, sheep, and hog raising in the Western States discussed in detail, and by a disinterested observer. It is a work that can not fail to be of value to those who contemplate entering into this branch of agriculture, and to those who are engaged in the exportation of meat to other countries. Those who are interested in the development of this branch of industry, as related to our national prosperity, will find here a vast fund of information upon food supply—a subject of interest both at home and abroad. Published in London, Eng. For sale by the Orange Judd Co.; price, \$1.50.

"House Drainage and Water Service in Cities, Villages, and Rural Neighborhoods," by James C. Bayles, New York: David Williams. This is a large octavo of 360 pages, with numerous wood-cuts and working drawings. A work of this importance requires more careful study than this mid-summer weather will allow, and we can only at present say that we are most favorably impressed with its apparent thoroughness and completeness. It, while giving full plans for supplying water to and carrying off the wastes of costly city-houses, does not omit the wants of the humblest farm-house, but it gives the simple earth-closet—without machinery, which we have on several occasions presented to the readers of the *American Agriculturist*. A copious index and marginal references add greatly to the value of the work. Sent from this office, post-paid, for the publisher's price, \$3.

Grafting and Budding.—Several years ago, we had occasion to notice "*L'Art de Greffer*," by Chas. Ballet, who kindly, through a mutual friend, sent us a copy of the work in the original French. Since then it has been translated into English, and published by Macmillan & Co., London, Eng. It is the most complete work on grafting—including budding—in any language,

and though the American propagator may not need to use many of the processes here described, it is well for him to know about them. We know of no other work that is so full on this method of propagation in all its varieties. It can be sent from this office post-paid for its price, \$1.75.

"How We Raised the Baby," is the title of a handsomely gotten up work by Derby Brothers, New York, written by "A Benedict," with a preface by the author of "Helen's Babies." It is well written in a pleasing style, and, so far as we have examined it, is a work which young mothers will welcome, giving both instruction and pleasure. Price, paper, 50c.; cloth, \$1.00.

Book for Shepherds.—"A. J. K." Springfield, Ill. Randall's Practical Shepherd is a very good book, but is not modern. Randall's Sheep Husbandry relates chiefly to the Southern States. A modern book, which includes all that is valuable in other works, and contains much new matter that is found in no other, is Stewart's Shepherd's Manual. This describes all the newer breeds, and even the cross-bred sheep, that are now coming into notoriety.

Poultry Journal.—"R. G.," Allegheny Co., Pa. The *American Agriculturist* contains every month much information regarding the breeds and management of poultry. Those, however, who desire a journal entirely devoted to poultry, will find an excellent one in the "Poultry World," Hartford, Conn.

A New Work on Birds, by the rising naturalist, C. J. Maynard, of Newtonville, Mass., is now being issued by the author. It is called "The Birds of Florida, with the Water and Game Birds of Eastern North America," and, with its appendix, is intended to describe all the birds occurring between the Mississippi and Atlantic Ocean. We say a "new work," though it is a new and revised edition, with many additions and improvements, of a work previously issued. With its additions it is practically new. Though it might have been somewhat condensed, it is a work full of interest to the lover and student of birds. The 16 plates, hand colored, are of new or little known species, and are handsome and life-like. The work has the charm of originality, being mostly from the author's own notes, gathered during 15 years of study and observation. It is issued in monthly parts, 16 in all; five are now out. Price, 85 cts. a number.

Harrison's New Standard Flouring Mill has, we understand, been recently improved by doubling the discharge spout, by the addition of a safety spring, which prevents damage from the passage of stones, nails, etc., and the substitution of a steel spindle in place of an iron one. Thus fitted out, these mills are doubtless equal to many years of grinding, as they are honestly made in other respects.

Clawson Wheat.—Our contributor, Joseph Harris, who talks about Crops on Moreton Farm, sends us specimens of heads from his crop of Clawson wheat. Being several years ago convinced of the value of this variety as a white winter wheat, he has taken pains to keep it pure and to introduce it to the attention of other wheat growers. The specimens, in both head and grain, warrant Mr. H's. high opinion of it. He offers it to those who wish to test it on very moderate terms.

Wheat on Poor Land.—"J. H. T.," Portage Co., Ohio. For a very poor soil, either of the special wheat manures made by Bowker & Co., or the Mapes Formula Co., could be used with the probability of success. It should be sown on harrowed ground, and harrowed in, after which the seed is to be sown. A very popular wheat is the Clawson. Fall wheat should be sown about the middle of September, or later where the fly is feared. Clover may be sown until early in the spring, or about the first of August, which some prefer as the best time.

Experiments with Wheat.—Last spring the *American Agriculturist* inaugurated some important farm experiments with fertilizers, which created a great interest, and are being carried out by a large number of farmers in various sections of the country, and with quite satisfactory results thus far. We are pleased to learn that this good work is to be continued by at least one prominent fertilizer house. The Mapes Fertilizer Company have arranged a "Complete Manure" set, on a simple and easily understood plan, which they offer to send to farmers at a merely nominal cost, as compared with the work and expense involved, especially for trial this fall on wheat, rye, and grass. There are four bags in the set, of a uniform size of 50 lbs. each, to be used on uniform sized plots. No. 1 is a complete fertilizer, containing nitrogen, phosphoric acid, and potash; Nos. 2, 3, and 4, are the same as No. 1, save that the nitrogen is left out in one, phosphoric acid in another, and potash in the last, thus covering the ground in a simple manner. These

experiments, while they may not tell just what and how much any particular soil lacks, and must be continued perhaps for years in order to reach any definite results, are instructive and valuable for any farmer to try, as they familiarize him with the substances employed, and teach many principles in the use of artificial fertilizers, which are fast becoming a necessity in American agriculture.

Reliable Business Men, those who have both the ability and the intention to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price, and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but this seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of trustworthy information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

Ashton's Factory-Filled Salt.—There are certain products which have a world-wide reputation; this has been established by observing through a long series of years a uniformly high standard of excellence. Among the various brands of Salt in the market, none has, to say the least, a better reputation among dairymen than the Ashton, and this has been acquired by preserving a high quality as to purity—and, what is of equal importance, a uniform texture as to grain. But our present object is not to extol the quality of the Ashton salt—a task as useless as to praise Day & Martin's Blacking, or Crosse & Blackwell's Worcestershire Sauce—articles to be found in every port in the world. The reputation of this salt was made many years ago, and its excellence has been frequently alluded to in these columns. The object of the present notice is to call the attention of those who have found the sacks of 250 lbs., in which this salt could heretofore only be obtained, inconveniently large, to the fact that it is now put up in small bags of 56 lbs. each, and the small dairyman can now purchase the salt in quantities suited to his needs, and of a quality guaranteed to be equal to that in the larger sacks.

An Interesting Excursion.—Our readers can not spend their leisure more pleasantly than in visiting regions whose magnificent imposing scenery enlarges one's ideas, lifts him, so to speak, out of himself, and carries him nearer to the Creator, through a contemplation of His wonderful works. Excursions are now arranged by the various public thoroughfares at so reasonable rates, that the farmers, after the labors of the harvest are ended, and at other periods, when work does not press, can take their families on jaunts of a few days for a comparatively small outlay. There is no locality in the Middle States which presents more magnificent natural scenery, more objects of interest and instruction, than what is known as the Lehigh mining region of Pennsylvania; extending from Bethlehem through the Lehigh Valley to Wilkesbarre. Two of our associates have this week returned from a visit thither. One of them, after travelling eight thousand miles through the Rocky Mountains and the far Western States and Territories, says that he nowhere found more imposing and romantic scenery, than he has now met with during his last week's jaunt in the Lehigh Valley. There are numerous railroad routes which convey visitors to this region, whether coming from the East or West. Two entire days should be spent at Mauch Chunk, where the Coal Mines, the "Switch Back" Railroad, Mt. Pisgah, Mt. Jefferson, Panther Creek Gorge, Onoko Glen, with its innumerable cascades and waterfalls, and many other points of attraction, afford a succession of gratifying surprises for the tourist.

The Interesting Market Tables, 1 to 5, on page 285, are, as usual, instructive—especially Table 3. The exports of Wheat since Jan. 1, have been nearly six times greater than last year, or 23,216,000 bushels against 4,640,064. Taking the flour as wheat, (5 bushels to the barrel), the excess this year is 23,443,881 bushels, or an excess of two million bushels over the greatest entire export for any season during six years previous. Many other figures in the several tables will repay careful study and comparison.

Herdin Sheep.—"K.," Half Day, Ill. One man can herd 2,000 sheep upon the plains with the help of a boy and two dogs. To herd 1,000 will require as much help. There is no better grain than corn for yield, ease of growing, and for use in feeding sheep. One ear per sheep each day, or one pint of shelled grain, is sufficient, with fair pasturage.

AMERICAN AGRICULTURIST

New York, August, 1878.

Agriculture of the Nile.

The plow-team in the picture tells the story of Nile farming in a simple, straightforward manner. In the strangely inharmonious outlines of the camel and the ox, one can trace the geography of the country thereabout: The desert has come to the Nile for drink, and to its harvest fields for food. The desert is but close at hand, just back of the bordering lands which feel the hand of the Nile-god in the moisture of the air, and receive his mantle of over-flowing waters. The incongruity of the mating indicates the half-civilized condition of the people, the mass of whom are living as their fathers lived centuries ago, who harness the camel and ox, use the same plow, plow just as deep, sow the same seed, cultivate the same crops in the same manner, are guided by the rise and fall of the Nile waters, and look upon the Nile-god as a deity rul-

light and easy to work that only the simplest and least costly of implements are required. They can live in ease, and revere and follow the customs of their fathers; for the Nile-god is the same yesterday, to-day, and—to-morrow will take care of itself. Such is the story of the plow. No need, then, you see, of an "Adamant," a "Patent Chilled Oliver," a "Centennial," or a "Holbrook." It does its work. "Let well enough alone," is the motto of that people. The turbaned plowman corroborates the tale of the team and of the plow. But he tells more: his clothing speaks of another race of fierce, hardy people, who, ages ago, came from the East and overran this land, bringing destruction to everything save the pyramids, the sphinx, the Nile, and the desert.

Hints for Work.

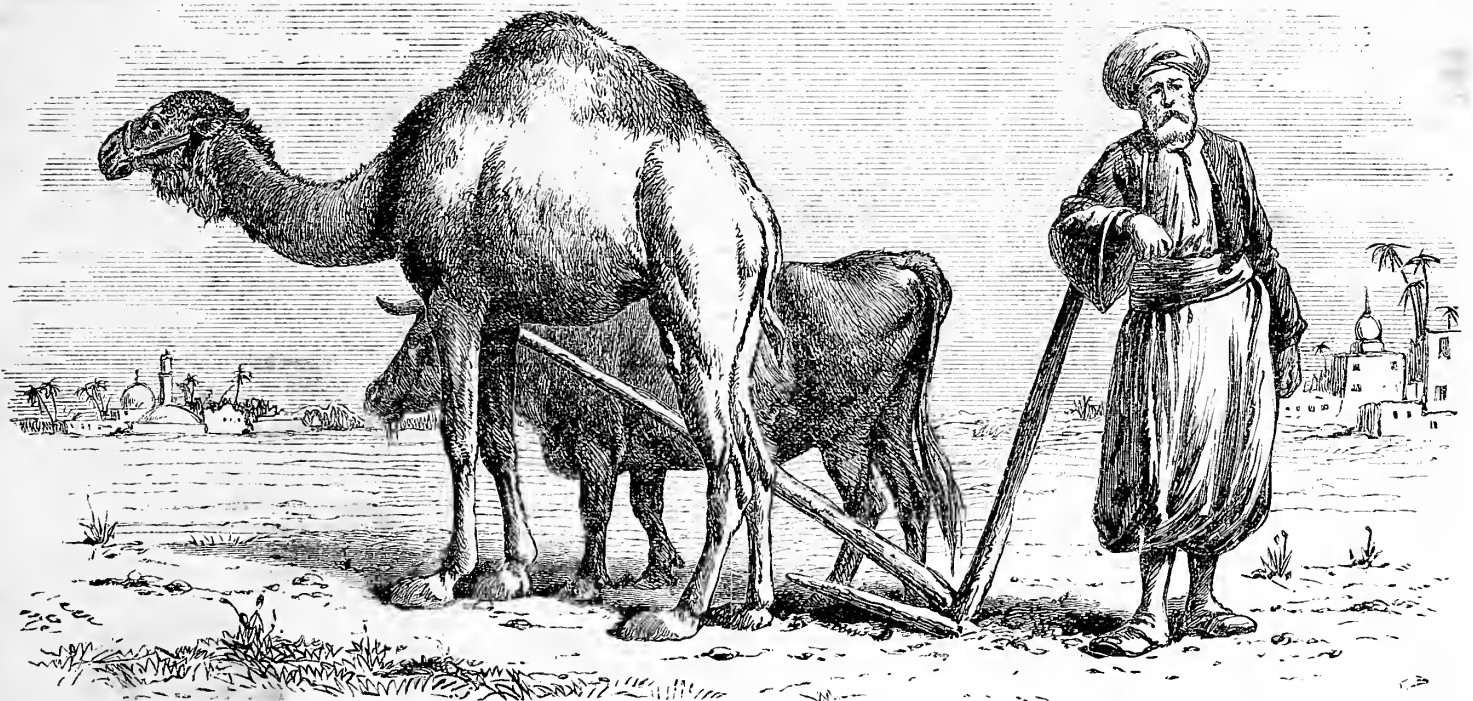
[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.]

An Explanation.—When we consider the vast territory over which the *American Agriculturist* circulates, and the great difference in the seasons, it is obvious that these hints cannot be used by all read-

is filled with weeds—of which the sprouting oats are the worst—and the rag-weed, and many others work mischief. An important needed improvement in agriculture is

A Change of Rotation.—With the present rapidly changing demands upon farmers for a greater variety of food products, we need a changed system of agriculture. The production of meat will have to be the chief aim of a large number. There is a widening demand for milk and cheese, and for the best grades of mutton sheep. All these are products of the highest systems of farming, in which the soil must be enriched and kept clear of weeds, so as to produce maximum crops of fodder that can be manufactured on the farm into these most salable articles. The old plan of rotation—grass and clover, corn, oats, and wheat—in which the three grain crops following each other, are not well adapted to cattle feeding, especially the last two—must be abandoned if we are to derive any advantage from the new demands and markets so auspiciously opening for us in Europe.

Drilling Wheat.—It would be an interesting and we believe a profitable experiment to sow at least one acre of wheat in drills, so far apart, that the crop could be cultivated. This may be done by tying each two of the drill spouts together, and thus discharging the seed into one furrow; sowing



A SCENE ON THE NILE. — FROM A SKETCH BY HOPPIN.

ing all their affairs, just as their fathers, and fathers' fathers, for many generations, did before them. The plow of the sketch would do very poor service in the hard soils of New England; on the prairies of the West it might do better. But it is made for a different condition of the agricultural soil. You see its story printed in plain characters on its rude mould-board, and share, and sole, which run together as one? It is as plain as the written language of the American Indian. It reads thus:

"There is no rain in this country; the Nile is fed by waters from the lakes and mountain streams of the far interior. The Nile-god knows that without rain his people can only water their crops by the severest of hard labor in irrigation. So once every year he calls upon the lakes and streams to fill the banks full to overflowing, and spreads out his mantle of water over the fields. As the waters subside, several inches of fine silt, brought from fertile woodlands at the source of the river, is left on the surface. This accumulation has gone on for centuries, so that it now composes the whole soil, which is so fine, light, and soft, that only this crooked stick is needed as a plow to stir it."

Thus the Nile-god cares for his people: he waters their lands, fertilizes the earth, gives them a soil so

ers alike. They must necessarily be general in character, and when it is not expressly stated that the remarks apply to a certain section, discretion must be used as to the time and manner of acting upon the hints given. For example, in regard to sowing, planting, harvesting, and such other work, it is evident that no one rule can apply everywhere; but it is easy for each reader to adapt the suggestion to his own locality.

Preparation for Wheat.—Harvest being over, the soil for the next crop needs to be prepared at once. In the Southern States, where sowing may be delayed for two months yet, a "pea-fallow" is an excellent preparation. Land may be plowed and harrowed and two bushels per acre of cow-peas sown. The seed is best covered with a five-tooth cultivator. The growth made when the time for wheat seeding arrives, is to be turned under carefully, and the ground leveled by drawing an inverted harrow over the field, which also helps to cover the vines. If cotton seed is used as a fertilizer, sow it upon the vines, before plowing under. In the north,

A Clover-sod, may be treated to a dressing of well rotted manure, and plowed late this month. Perhaps there can be no better method for wheat than this.

Wheat after Oats, is a faulty practice. The soil

somewhat less seed. Then the rows will be 12, 14, or 16 inches apart; and the spaces may be cultivated by adapting an ordinary spreading cultivator, or using a wheat hoe, such as has been often described in the *American Agriculturist*. A yield of 60 to 80 bushels per acre, has been obtained in this manner.

Seed.—As much depends on the variety of wheat sown as upon the manner or cultivation. Upon similar soil, and with the same treatment, one variety may yield twice as much as another. Of several new varieties tried by the writer the present season, the Clawson has excelled.

Early Sowing is preferable, except where there is danger of the Hessian fly; in which case sowing may be deferred until late next month; but of the two evils—the fly or late sowing—it is questionable which is the worse. Many good farmers believe liberal fertilizing, and the consequent vigorous growth, to be the best remedy against the pest. This, however, is a matter in which local circumstances must be well considered.

Rye.—The remarks relating to wheat apply equally to rye. Where the straw is salable, this is often a more valuable crop than wheat.

Fodder.—For fall fodder, white turnips may be sown this month. An oat stubble plowed and

fertilized, may easily produce 600 or 800 bushels per acre, well worth 10 cents a bushel for cows, sheep, or pigs, and which will keep until January in good condition. 300 lbs. per acre of artificial turnip manure, or superphosphate, will aid greatly.

Southern Fodder Crops.—In the South, fodder crops may be consumed upon the ground, and the labor of harvesting saved. Turnips may be thus used for sheep, cattle, or pigs. For fall pasture, hay, rye, wheat, oats, barley, or millet, may be sown late this month; but as a drouth may render the ground too hard for plowing, this work should be done at the earliest convenience.

Plowing.—No time should be lost in plowing the land intended for fall crops. A double benefit will accrue in avoiding the risk of a drouth-hardened soil, and at no other time can weeds be so easily killed as now. One or two workings with a cultivator, or harrowing before weeds go to seed, will effect a good fall-fallowing and add fertility to the soil.

Green Fodder not required for feeding should be cut and cured for winter use before ripening. A well-worked crop of fodder-corn may very well be followed by fall grain or turnips. No piece of arable ground should be left idle.

Winter Oats are a valuable crop for the South, and as far north as Virginia, but a trial last season convinced the writer that this is not a crop for the North. Not one plant survived from a bushel of seed sown. In the South, the seed is sown next month, but the ground should be fitted as soon as possible. 2½ to 3 bushels of seed per acre is required. For winter pasture, and cutting for early spring fodder, this is very valuable.

Artificial Fertilizers.—Experience gained the past season goes to show that liberal manuring is the most economical. We can see in the past harvest where five dollars worth more fertilizer per acre would have given twice that value of grain. There can be no doubt that artificial manuring must become a part of our settled practice in the future, and making a few careful experiments will give valuable experience as to the use of these fertilizers.

Reclaiming Waste Lands.—No farmer can now afford to let any of his land lie idle, especially swamp lands, which, when reclaimed, may make the richest part of the farm. The present month is a good time for the work. Drains may be opened, and brush cut now will rarely sprout again. In doing this work, it is best to clear thoroughly as one goes. The portion begun should be grubbed, levelled, plowed, and, if desired, sown to grass before a second plot is touched. By finishing an acre or two, something effective is performed, and there will not be the discouragement and dissatisfaction felt as when a large piece is begun and left unfinished.

Cows.—Now that pastures are dry and bare, a provision of green fodder will be found acceptable. When green fodder is given, a regular ration of one ounce of salt daily should be supplied. A cow giving 10 to 12 quarts of milk per day, will consume 80 pounds of green fodder with 4 quarts of grain, every 24 hours. Where green fodder is provided, it may be well to keep the cows in a dark stable during the heat of the day. The past month the writer has found a considerable difference in the yield of milk in favor of this mid-day shade and rest.

Horses.—A run in a pasture field at night will be very acceptable to the working horses. In close stables the flies greatly disturb them, which they escape in the field. After a day's work, to sponge the coat with clean water, having a dash of carbolic soap in it, will be refreshing and healthful, and will prevent much of the annoyance from flies. Cleanliness will almost entirely avoid the disagreeable horse smell so prevalent in warm weather. The night's pasture should not be counted as part of the feed; the usual feed should be given before they are turned out in the evening.

Galls of the Skin.—Where the skin is chafed or galled by the harness, it should be washed with salt water, and, when dry, painted with spirits of turpentine. This will heal the raw spot, and keep off the flies. To prevent galls, scrape and wipe off with a wet cloth the harness where it presses closely upon the skin. Pads are to be avoided. A collar

or other part that will admit of a pad under it, fits badly, and is almost certain to produce galls.

Colts may now get a few oats daily as the grass fails. A shelter should be provided in the pasture where they can find shade; it should be in an airy part of the field, free from flies.

Sheep.—Ewes that are separated from the lambs should be closely watched, and the milk drawn from those whose udders are full. Where early lambs are wanted, the ewes should now be well fed; a pint of mixed rye, buckwheat and linseed meal may be given, and the ram introduced into the pen at night. For early lambs, the Southdown cross is preferable for quality, and the Cotswold for size. The flock will need the closest watchfulness just now; the gad-fly, dysentery, and the maggot are troublesome and dangerous enemies at this season. Count the flock every evening, and look up the stragglers without loss of time.

Pigs and Poultry, are omnivorous animals, and their tastes should be consulted. When in confinement, some fresh green food is needed, and a few chopped cabbages, or corn fodder will be greatly relished. Cleanliness in the pens will prevent disease, and keep vermin away. To keep places of this kind clean is much less trouble and labor than to make them clean when they have been neglected. Plenty of white wash inside will cleanse and sweeten.

How to Apply Whitewash.—Make a barrel full of lime-wash by slacking a bushel of fresh lime in a pork barrel, filling up the barrel with water, and stirring until thoroughly well mixed. Strain the wash into a pail as it is needed. With one of the Whitman Fountain Pumps give the walls and ceiling a douche bath of the lime wash, pumping it freely into the corners and crevices. With care, not a splash need come upon the clothes, and the hands may be protected by an old pair of mittens or a pair of old socks.

Notes for the Orchard and Garden.

Sufficient was said last month on the holiday of the orchardist and gardener, and on its profitable use. With many this will be the month of greatest leisure, and it will, we trust, be to many one of recreation; others having had their holiday, have already begun to look at the fall work. Of course, with such a wide circle, our Notes must always look forwards and backwards, and at the risk of much repetition we advise consulting "last month's Notes."

Orchard and Nursery.

We have before stated that, so far as the nursery is concerned, we do not pretend to act as a guide to the professional nurserymen, but only to give such hints as may be of use to those who propagate trees for their own or their neighbors' planting. We would especially call the attention of

Farmers' Boys to the fact that there is nothing in the whole routine of raising ordinary fruit-trees that is beyond their skill, and that there is a chance of adding essentially to their income, if they will supply such trees as their neighbors are likely to want. We can not, in these Notes, go into every

Nursery Detail, but the whole story is so plainly told by one of our most successful nurserymen, Mr. P. Barry, in his "Fruit Garden," that with this as a guide, we do not see how it is possible for any one of fair intelligence to go astray. It is worth while for young men, in localities where trees are likely to be in demand for some years to come, as they will be generally, to think of this matter.

There is no *Mystery* about any of the operations, of grafting and budding. Any boy who can make a willow whistle, can successfully perform these operations. It only needs a trial to show how easy both are. In a nursery the first need is

The Stocks, and these are for the most part raised from seed. Therefore, begin and collect peach-stones, etc. It is a notion among some peach-growers that only the seeds of the "native" or unbudded peach should be used for stocks. On the

other hand, excellent authorities claim that the seed of any *healthy peach* is as good as that of the "Indian" peach, and we really do not see why it should not be so. The peach-growers of Europe have no wild trees to supply them with stocks, and we hear no complaint on this account.

Apple and Pear Stocks are raised from miscellaneous seed, that of the pear being usually imported, while apple seeds are obtained from the pomace of the cider mills. When the operations are small, and most beginners will make their first attempts with hundreds instead of thousands, it is easy to get seed for stocks from the fruit eaten or otherwise disposed of in the family. Have boxes, pots, or other vessels of sand, put in convenient places, and let every member of the family who eats an apple or a pear, remove the seeds from the core, and cover them with the sand; let the same be done with fruit to be used for cooking. In this manner the beginner can procure all the apple and pear seeds he will need to plant for stocks next spring.

Gathering Fruit.—Sufficient was said last month on the summer varieties of apples. With early pears, special care is often needed, as most of these, if allowed to remain too long upon the tree, will decay at the core. Just so soon as a pear is mature, which may be known by the readiness with which the stem parts from the tree, even if still quite hard, the fruit should be picked and marketed, or if to be consumed at home, ripened in the house.

Marketing Pears, study the characteristics of each variety, and so arrange the picking that the fruit will be firm when it reaches the market.

Peaches should be the harder, the longer the distance they are to travel. Even for a near market, a single peach in the proper condition to eat, may become bruised, and spoil the appearance of the whole crate or basket. The peck basket, which we illustrated a few years ago, has now become common in city markets, but is still mainly used by dealers for repacking. Growers should study the wants of their market, and endeavor to supply them, and not leave these and the attendant profit to middle men. The success of growers of fruit of all kinds depends largely upon their

Commission Men.—Do not change consignees without due cause. Recollect that there is scarcely any business in which there are so many chances of going wrong as in handling fruit. The delay of a train for a few hours, while quite beyond the control of the consignee, may cause him to sell the fruit far below the rates of earlier arrivals. Fix upon your commission men early in the season, and stick to them until good reason is found for a change. Every fruit-producing district, the peach regions especially, is over-run with glib-tongued chaps, who are abundant with promises. Give little heed to such; as a general thing they are mere "sidewalk" dealers, with no "local habitation." It is a safe rule to consign fruit to well-established houses only. There are men who have been in the business for years, and who have worked hard to build up a reputation for fair dealing. Each city has such, and it will be well to find them out.

Young Trees will often suffer more severely this month than in any other, from dry weather, and even now, it may be necessary to apply a mulch—anything: straw, grass, chips, stones—whatever will cover the surface and prevent evaporation, to save them. On these young trees

Control the New Growth.—If shoots start where they are not wanted, rub them off. If some limbs are far ahead of others, check the rampant growers by pinching off their ends. The growth may be thus controlled, and future pruning avoided.

Insects are, as in other months, to be expected, and must be kept in control. The "Late," or "Fall-Web-Worm" will continue to weave its nets, and the shortest way is to cut off twigs and put them under-foot. Late broods of plant-lice may be destroyed by strong tobacco-water.

Budding is in season this month, according to the locality. In the Northern States, cherries, plums, and pears on their own stocks will be continued, or finished, while later in the month will be the usual time for budding peaches and pears on quince.

Fruit Garden.

The early crops being off, the plants must be treated with reference to next year's bearing.

Strawberries.—Growers differ as to the advisability of fall or spring planting. A new strawberry plant needs a full season's growth to become strong enough to bear a full crop. If the early runners remain where they take root, they will bear a crop next spring. If they are rooted in pots, and transferred to another bed, without any disturbance of the roots, they will bear well next year. This method, described more in full on p. 301, while very useful in private gardens, is not to be thought of by those who plant acres. If ordinary plants be set next spring, they will grow all the season, and give a crop the year following. If set this fall, they will make some growth, give a few berries next spring, but not a full crop until the next year.

Growers of Plants advise spring planting, and with good reason, their propagating beds keep pushing out runners, which take root and form new plants until cold weather checks them. If planting is done in the fall, it should be done early—not later than September; and to furnish plants at this time the nurseryman is obliged to waste many runners, which if left alone for a few weeks would make good plants for his spring sales.

In Fall Planting, the ground is in such excellent condition, and other work is not so pressing as in spring, that those who raise their own plants, will find it advantageous to set at this season. If the plants are at hand, they can be set early in September, after very hot weather is over; at this time the outer leaves of the plants should be removed, leaving only the central bud; if the season is favorable for a late growth, the chances are that a fair crop may be gathered next spring.

Blackberries and Raspberries.—The new growth to bear next year having been selected, all other shoots are to be destroyed. Pinching the growing end, when the canes are tall enough, as advised last month, will cause side shoots to grow, and these, when 12 or 18 inches long, according to the kind, are to have their growth stopped by pinching. Proper attention at this season will result in well-branched stocky plants, with abundant fruit next year. Black-caps and those red varieties that do not form suckers, are to have their new shoots required for next year's fruiting, similarly pinched, and all others, that will make the bush too dense, are to be removed.

Grape Vines need watching for the first appearance of mildew. Some varieties, especially those hybrids containing a cross of the European vine, are usually more susceptible to mildew than the natives. When the leaves of any vine in the collection, show grayish white spots on the underside, or the stems to the clusters show a mouldy appearance, apply sulphur to the whole, as it acts as a preventive, as well as a cure. The dealers furnish bellows for the purpose, which allow the under-side of the leaves to be reached. Apply on a still day, and diffuse a slight but uniform dusting over the whole vine. If laterals continue to push, pinch back as heretofore directed.

Dwarf Pears and such other large fruits as may be in the fruit garden, are to be treated as directed under "Orchard."

Insects, are still to be fought; the fall web-worm is not particular as to its choice, and spreads its net here and there. The large beetles and caterpillars upon the grape are to be hand-picked.

Kitchen and Market Garden.

This is a month of abundant returns from the garden, but it is also one of a rich harvest of weeds. The hot days are favorable to the destruction of weeds, and all work with the horse or hand implements tells most satisfactorily. Weed-killing—always in order—and the setting and sowing of a few late and succession crops are about all that will occupy the gardener, who will find in this of all working months his nearest approach to leisure. Many of last month's Notes apply to this.

Seed Sowing for the later crops will begin this

month. Spinach may be sown for an early fall-crop, but that to be cut later, or to be wintered over, should not go in until next month. Rutabagas, if not put in last month, should be sown at once; but the quicker-maturing sorts like Yellow-Stone and Aberdeen will be more sure now, and in the latitude of New York, are sown during the last of the month; the "Cow-horn" and "Strap-leaf" will do if sown early next month.

Beans and Peas.—If beans are wanted for pickling or salting, sow Early Valentine. Refugee is the variety usually advised for a late crop, but is not so good as the other for preserving or for table use. Late crops of peas will sometimes succeed. The Early Dwarf sorts, like "Little Gem," may be tried.

Onions are usually ready to harvest at the end of this, or the first of next month; when a majority of the tops fall over, growth has ceased, and the onions may be pulled. Many growers prefer to sell at once. If they are to be stored the onions should be left on the bed, throwing three or four rows into one, until well cured.

Onion Sets, as soon as growth ceases, are to be pulled, allowed to dry, and stored in a cool, airy place in thin layers, to prevent heating.

Celery.—Late plantings may still be made, and in ordinary seasons will form good-sized roots. That already out needs to have the cultivator run between the rows, occasionally, and such weeds as appear in the rows removed by hand or a "lance-headed hoe."

Root Crops of all kinds should be worked until the growth of leaves prevents it.

Sweet Corn in the garden, with a little care, may be made to aid the dairy. So soon as the ears are off, the stalks may be cut to feed green, or they may be cured for later use. Reject and burn all stalks that are "smutty."

Sweet Potatoes are to be kept clear of weeds until the vines cover the ground; lift or move them occasionally to keep the vines from taking root.

Squashes, on the other hand, should be allowed to take root. (See last month on insects, etc.)

Melons may be made to ripen evenly, by turning, as they approach maturity, and it is well to place a wisp of hay or a shingle under them to keep them from the ground. When a melon is ripe the stem readily parts from the fruit.

Watermelons are known to be ripe by the sound they give when struck by the finger. A sound cannot be readily described, but a little practice soon makes it familiar.

Insects will be abundant and must not be neglected. As soon as turnips are up "the flea" will find them. Sprinkle air-slaked lime or ashes along the rows. Watch the tomatoes for the "worm," which can usually be traced by its droppings.

Flower Garden and Lawn.

The work here will be mainly that of keeping things in order. See last month's Notes on mowing lawns, and let the operation be governed by the condition of the grass and the weather....Stake Dahlias, Tuberoses, Gladioluses, Lilies, and such other plants as need this support....Insects are often troublesome; the abundant lice on Chrysanthemums may be treated to strong tobacco water. The caterpillars which disfigure lilies are to be hand-picked....Cut away flower clusters when faded, and remove all spent annuals....Bedding plants in lines or figures will need pinching to keep them at proper height, or to prevent the lines from becoming indistinct by plants growing together....If it is desirable to make cuttings of any bedding plants, do it while they are still vigorous.

Greenhouse and Window Plants.

The needed directions for these were given in last month's Notes....Whatever repairs are needed about the greenhouses or frames, should be done long before cool weather comes....Propagation of many plants may go on in a shaded house. Most roses will grow from cuttings of shoots that have well-formed buds in the axils of their leaves, and cuttings should be taken of such bedding plants as it is desirable to keep a stock of during winter,

and of such plants as have been turned out into the borders, and will be too large to take up in the fall....See that pots set out of doors are not exposed to full sun, as this will greatly injure the roots, and is often an unsuspected cause of bad health.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending July 13th, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.
25 days this m'th	1,382,000	4,907,000	3,962,000	490,000	261,000	1,137,000	—	—	—
26 days last m'th	1,341,000	4,812,000	3,617,000	616,000	307,000	811,000	—	—	—
2. Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.
25 days 1878.	1,382,000	4,907,000	3,962,000	490,000	261,000	1,137,000	—	—	—
25 days 1877.	1,267,500	2,511,000	2,104,000	79,000	197,000	1,281,000	—	—	—
3. Exports from New York, Jan. 1, to July 11.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.	
bbls.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.
78.1,387,000	23,216,000	13,304,000	2,511,000	1,653,000	891,000	293,000	—	—	—
77. 613,411	4,610,061	10,108,374	717,565	543,151	92,515	150,282	—	—	—
76.1,019,138	15,769,340	8,395,561	541,823	8,073	272,581	410,940	—	—	—
75. 923,280	10,633,507	6,008,193	105,087	765	61,840	218,169	—	—	—
74.1,182,136	20,001,800	10,155,000	513,622	240	53,613	235,665	—	—	—
73. 638,482	6,671,645	6,531,315	199,676	19,226	17,578	53,080	—	—	—
72. 418,080	4,204,506	11,967,765	366,829	22,656	17,215	115,068	—	—	—
4. Stock of grain in store at New York.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.	
bbls.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.
July 11, 78.1,591,132	720,784	138,852	174,000	207,769	603,075	—	—	—	—
June 10, 78.1,481,700	616,623	148,889	197,507	608,153	288,285	—	—	—	—
May 7, 1878. 748,196	263,040	75,239	247,576	570,798	258,327	—	—	—	—
Apr. 15, 1878. 1,370,081	511,648	106,975	396,861	857,273	253,424	—	—	—	—
Mar. 11, 1878. 1,659,371	4,014,141	114,260	609,145	1,090,897	275,705	—	—	—	—
Feb. 11, 1878. 1,474,035	771,470	308,816	83,463	1,416,633	318,079	—	—	—	—
Jan. 10, 1878. 1,576,930	1,005,909	399,333	918,595	1,087,085	321,474	—	—	—	—
Dec. 10, 1877. 1,411,945	1,723,229	399,077	894,737	1,870,032	338,849	—	—	—	—
Nov. 5, 1877. 981,371	2,643,502	166,940	368,429	1,70,759	328,838	—	—	—	—
Oct. 7, 1877. 761,656	468,809	193,016	174,375	347,841	291,654	—	—	—	—
Sept. 7, 1877. 3,083,819	2,302,261	3,4,142	611,114	966,111	388,605	—	—	—	—
Aug. 8, 1877. 3,068,010	3,017,044	84,750	905,615	1,088,104	425,406	—	—	—	—
July 11, 1876. 3,110,283	3,385,574	218,841	873,310	1,182,332	528,401	—	—	—	—
June 10, 1876. 3,930,474	232,140	68,429	200,381	766,282	436,942	—	—	—	—
May 7, 1876. 3,502,293	633,993	109,711	325,191	1,080,390	307,438	—	—	—	—
5. The water receipts at Albany, from opening of navigation to July 1st.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.	
bbls.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.
78. 2,400	8,041,600	7,119,700	626,500	281,500	1,502,300	110,600	—	—	—
77. 2,400	1,394,800	4,111,000	1,400	31,000	729,200	729,200	—	—	—
76. 10,100	5,504,100	887,100	213,500	91,000	1,120,700	331,000	—	—	—
75. 17,200	4,295,800	1,243,300	54,400	—	782,300	428,308	—	—	—
74. 17,900	8,618,000	4,190,000	174,100	74,100	996,200	—	—	—	—
73. 52,100	3,556,100	3,518,100	293,100	12,200	810,400	—	—	—	—
72. 32,300	1,643,800	6,516,600	263,100	451,200	1,561,200	—	—	—	—
71. 78,700	4,338,300	4,253,000	46,200	40,100	999,600	—	—	—	—

Gold has been up to 101½ and down to 100½, closing July 13, at 100½, as against 100½ on June 13; 100½ on May 13; 100½ on April 17th; 102½ on Jan. 12; 103 on Dec. 12; 102½ on November 12; 103 on October 12; and 105½ on July 12 of last year....Foreign advices, as to Breadstuffs, have been more or less variable and conflicting in tenor, but toward the close deemed favorable to the export interest, while domestic crop and weather reports have been, on the whole, encouraging; though, in instances, less so than about the date of our last review. Receipts of Breadstuffs at the seaboard have been on a restricted scale, checked to a considerable extent by speculative influences in operation at the West. This circumstance has been against a free export movement. Nevertheless, business in Flour and Grain has been quite extensive. In Flour, mainly for home trade; in Wheat, Corn, and Rye, largely for shipment; and in Oats, chiefly for local use and on speculative account, though to a respectable aggregate for the French market. Prices of Breadstuffs have fluctuated frequently, and in several cases, widely—Wheat showing a further marked decline, but leaving off more firmly. The transactions in Corn at the extreme close were on a very liberal scale, on Friday, 12th July, exceeding 1,350,000 bushels, of which over 1,000,000 bushels were for future delivery. New Wheat, and new crop Wheat Flour, have been arriving more freely, and have been selling on arrival at generally low figures. The most important operations in new Wheat, however, have been in Choice Red Amber, and White, for future delivery, extending into September, and almost wholly to export buyers....Cotton has been less active, and quoted lower, closing irregularly....Wool has met with a readier market toward the close, and leaves off with more firmness. Provisions have been in more demand, but unsettled as to prices, closing more steadily....Hay and Hops have been in generally slack request at our quotations....Tobacco more active at unchanged rates....Rice brisker at stronger prices....Naval Stores and Petroleum in moderate demand....Grass Seeds dull....Groceries fairly active; Sugar and Molasses steady....Ocean freights have been moderately active, especially in the Grain, Petroleum, and Provision interests, but close lower....Grain rates by steam to Liverpool closed July 13th at 6¼@7d. (about 14 cents) per bushel; Glasgow, 7¼d.

London, 7½@7¾d.; Bristol, 7d.; Hull, 7½@8d.; the Continent, 9½@10½d.; by sail to Liverpool, 6½d.; London, 6½@7d. per bush. Flour to Liverpool, by steam, 2s. @2s. 3d. (about 50¢ @51 cents per bush.); by sail at 2s.; London, 2s., and by steam, 2s. 6d.; Bristol, by steam, 2s. 9d. @3s., and sail, 2s. 4½d. @2s. 6d. per bush. Provisions by steam to Liverpool, 30s. @45s. per ton. Butter, in refrigerators, 125s. Cotton, by sail, 15½d., and steam, 1½d. per lb. Grain, by sail, for Cork and orders, at 5s. 9d. @6s. 3d. per quarter (8 bushels), and to Continental ports, 5s. 6d. @7s.; and from Phila. for Cork and orders, 6s. @6s. 3d., and from Balt. for Cork and orders, 6s. @6s. 3d.

CURRENT WHOLESALE PRICES.

	June 13.	July 13.
PRICE OF GOLD.....	100 7-8	100 1-2
Flour—Super to Extra State	\$3 35 @ 4 75	\$3 30 @ 4 50
Super to Extra Southern.....	3 50 @ 4 75	3 30 @ 4 75
Extra Western.....	4 15 @ 5 00	4 00 @ 5 00
Extra Genesee.....	4 50 @ 5 25	4 20 @ 5 00
Superfine Western.....	3 35 @ 4 15	3 30 @ 3 90
Rye Flour, Superfine.....	3 00 @ 3 65	2 70 @ 3 30
CORN-MEAL.....	2 10 @ 2 85	2 10 @ 2 90
WHEAT—All kinds of White.	1 20 @ 1 80	1 10 @ 1 26
All kinds of Red and Amber.	95 @ 1 18	90 @ 1 15
Corn—Yellow.....	45 @ 54	45 @ 53
Mixed.....	40 @ 46	40 @ 43
White.....	45 @ 57	45 @ 54
OATS—Western.....	27 @ 36½	30 @ 42½
State.....	28½ @ 36	30 @ 42½
Rye.....	63 @ 68	59 @ 66
BARLEY.....	40 @ 80	Nominal.
BARLEY MALT.....	60 @ 1 10	60 @ 1 10
HAY—Bale, 100 lbs.....	35 @ 75	35 @ 75
STRAW, 100 lbs.....	15 @ 25	15 @ 25
COTTON— Middlings.....	11½ @ 11½	11½ @ 11½
HOPS—Crop of 1877, per lb.....	5 @ 10	5 @ 12
old, per lb.....	1 @ 3	1 @ 3
FEATHERS—Live Geese, per lb.....	35 @ 48	35 @ 47½
SEED—Clover, West, & St.....	7½ @ 8	7½ @ 8
Timothy, per bushel.....	1 25 @ 1 40	1 25 @ 1 40
FLAX, per bushel.....	1 35 @ 1 45	1 40 @ 1 50
SUGAR—Refined & Grocery.....	23 @ 38½	23 @ 38½
MOLASSES, Cuba, per gal.....	25 @ 48	25 @ 48
New Orleans, per gal.....	23 @ 48	23 @ 48
COFFEE—Rio (Gold).....	13½ @ 16½	13 @ 17
TOBACCO, Kentucky, &c., per lb.....	2½ @ 4	2½ @ 4
Seed Leaf, per lb.....	4 @ 50	4 @ 50
WOOL—Domestic, fleece, per lb.....	22 @ 45	20 @ 42
Domestic, pulled, per lb.....	16 @ 33	12 @ 28
California, spring clip, per lb.....	12 @ 27	12 @ 27
California, fall clip, per lb.....	12 @ 19½	12 @ 19
FALLOW, per lb.....	7 @ 7	6½ @ 7
Oil—Coke, per ton.....	30 00 @ 31 00	28 50 @ 30 00
PORK—Mess, per barrel.....	10 00 @ 10 50	10 25 @ 10 75
Extra Prime, per barrel.....	Nominal.	9 50 @ 9 87½
BEEF—Extra mess, per lb.....	11 15 @ 12 00	11 00 @ 12 00
LARD, in tins, & bls, per 100 lb.....	7 00 @ 7 55	6 75 @ 7 25
BUTTER—State, per lb.....	8 @ 19	8 @ 20
Western, poor to fancy, per lb.....	8 @ 19	8 @ 20
CHEESE.....	3 @ 8½	3 @ 8½
EGGS—Fresh, per dozen.....	13½ @ 15½	8 @ 14
POULTRY—Fowls, per lb.....	9 @ 13	9 @ 13
Chickens, per lb.....	18 @ 27	12 @ 18
Penn., per lb.....	— @ —	18 @ 28
Turkeys—per lb.....	9 @ 13	9 @ 15
Geese, per pair.....	1 00 @ 1 50	90 @ 1 50
Ducks, per pair.....	50 @ 90	40 @ 75
Geese, per pair.....	50 @ 90	40 @ 75
Capons, per lb.....	24 @ 30	— @ —
PIGEONS, wild, per doz.....	40 @ 65	65 @ 90
SQUABS, per dozen.....	40 @ 15	50 @ 1 25
SNIPS, per doz.....	25 @ 3 00	— @ —
APPLES—new, per barrel.....	— @ —	1 50 @ 3 50
PEANUTS, domestic, per bush.....	90 @ 1 50	1 30 @ 1 55
STRAWBERRIES, per quart.....	5 @ 8½	— @ —
CHERRIES, per lb.....	6 @ 12½	8 @ 15
CITRUS, per lb.....	— @ —	2 @ 5
RASPBERRIES, per qt.....	— @ —	2 @ 5
BLACKBERRIES, per qt.....	— @ —	6 @ 10
WHORTLEBERRIES, per bush.....	— @ —	3 50 @ 4 25
GOOSEBERRIES, per bbl.....	— @ —	2 75 @ 5 50
PEACHES, per crate.....	— @ —	75 @ 3 50
PLUMS, per quart.....	— @ —	5 @ 8
CHAMBERLAIN'S, per bbl.....	— @ —	40 @ 50
RADISHES, new, per bbl.....	40 @ 75	40 @ 50
EGGS—Canada, in bond, per bbl.....	76 @ 1 18	— @ 77
green, per bush.....	1 05 @ 1 75	1 05 @ 1 10
bag.....	— @ —	30 @ 50
POTATOES, new, per bush.....	1 25 @ 5 50	1 15 @ 2 75
POTATOES—old, per bush.....	1 25 @ 1 75	Nominal.
SWEET POTATOES—new, per cte.....	— @ —	Nominal.
BEETS, per 100 bunches.....	2 00 @ 3 00	1 00 @ 1 25
TURNIPS, per 100 bunches.....	2 00 @ 1 50	1 00 @ 1 25
white, per 100 bunches.....	2 00 @ 3 50	2 00 @ 3 00
BRANS—per bushel.....	1 25 @ 5 50	1 25 @ 3 25
BROOM-CORN.....	3½ @ 7½	3½ @ 7
SPINACH, per bbl.....	37 @ 50	25 @ 50
TOMATOES, per crate.....	50 @ 75	50 @ 75
CALIFLOWERS, per doz. heads.....	43 @ 1 50	50 @ 2 00
CARROTS—new, per bbl.....	— @ —	2 00 @ 6 00
ONIONS—per bbl.....	— @ —	— @ —
per crate.....	1 25 @ 2 25	60 @ 65
RHUBARB, per 100 bunches.....	1 25 @ 2 25	— @ —
ASPARAGUS, new, per doz. bun.....	1 00 @ 1 75	— @ —
LETUCE, per bbl.....	50 @ 75	25 @ 75
WATERMELONS, per 100.....	— @ —	20 00 @ 35 00
STRING BEANS, per bbl.....	2 75 @ 3 50	75 @ 1 25
CUCUMBERS, per crate.....	30 @ 1 25	35 @ 75

New York Live-Stock Markets.

WEEK ENDING	Receipts.	Cows.	Calves.	Sheep.	Swine.
June 17.....	11,934	52	4,819	23,330	32,361
June 21.....	11,722	35	4,385	22,222	31,772
July 1.....	8,254	83	4,188	21,208	29,133
July 8.....	8,911	41	2,266	24,779	27,501
July 15.....	10,014	60	3,692	26,196	28,195
Total for 5 Weeks.....	50,715	271	21,010	131,923	138,450
do. for prev. 4 Weeks.....	46,195	166	19,413	115,071	135,418

Bees.—The month's business has been full of disaster to dealers. A worse market than has been found the past month has never been known, and prices fell lower than we have any precedent for. The receipts have been large, and the demand both from butchers and for export has been small, and between the two, dealers have lost very heavily. Towards the end of the month lighter receipts gave matters a better look, but still the market dragged along, and purchasers did about what they pleased with the stock offered. At the close the

market again fell off ¼c. per lb., sales being made at 7½c. per lb. for Texans, to dress 55 lbs. per 100 weight; 8½c. for fair natives, 56 lbs. to the 100. The extreme price paid was 11½c. for extra steers of 1,635 lbs., estimated at 57 lbs. dressed weight on 100 lbs. live.

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
June 17.....	7 @ 11 c.	8½ @ 9½c.	9 c.
June 24.....	7 @ 11½c.	8 @ 9½c.	8½c.
July 1.....	7½ @ 10½c.	8½ @ 9½c.	8½c.
July 8.....	7½ @ 10½c.	9 @ 10 c.	9½c.
July 15.....	7½ @ 11½c.	9 @ 10 c.	9½c.

Cows.—There has been no demand for cows, and to sell those which have been offered has been impossible at any price. Milk from the country has sold as low as \$1 per 40 quart can, and city dairies have no inducement to buy cows. There are no prices, and quotations are nominal.

Calves.—The demand has been good for veals, and with a short supply trade has been active, and prices tending upwards. Naturally, things took a turn, more stock came forward, and the market, uneasy all over, declined at least ¼ ct. per lb., with a dull feeling. The closing market was weak, with sales of buttermilk calves at 3c. @3½c. per lb., live weight. Veals brought 6c. @6½c. for good to extra, dead weight. Grass calves were as low as 4c. per lb., dressed.

Sheep and Lambs.—A gradual improvement has marked the course of trade in this stock. The supply has been fair, the quality good, and the demand strong. Prices advanced up to the end of the month, when trade became weak, and prices declined. A falling off is to be noted as we close our report, and a range of prices from 4½c. @5½c. per lb., live weight, with 5½c. @6½c. for lambs.

Swine.—Hogs have been steady, without much change in prices. The final quotations are 4½c. @4¾c. per lb. for live hogs, and 5½c. @6c. per lb. for dressed, with a firm market.

The Horse Market.—The supply of horses the past month has been less than usual. At the same time trade has been very quiet. Over 2,000 head have been exported so far this year. In Europe the horse trade is very much depressed, and the now almost certain prospects of peace have not tended to change this feeling. There promises, however, to be a steady demand for useful horses for the "tram-roads," as the car routes are there called, and it is to be noticed that our thoroughbred horses are coming into favor there. Quotations are nominal, city business being entirely suspended at present.

Prices of Feed.

Brass, per ton.....	\$18.00 @ \$20.00
Middlings, per ton.....	19.00 @ 21.00
Ground Feed, per ton.....	15.00 @ 21.00
Linseed-oil-cake, western, per ton.....	44.00 @ 47.00
Cotton-seed-cake, per ton.....	25.50 @ 40.00
Chandler's Scraps, per lb.....	3 @ 4

Prices of Fertilizers.

No. 1 Peruvian Guano 10 p. ct. ammonia standard, per ton.....	\$36.50
do. do. Lobos, do. do. do.....	47.50
do. do. guaranteed, per ton, cargo H.....	56.00
do. do. rectified, per ton, 9.70 p. c.....	61.00
do. do. do. do. 3.40 p. c.....	51.00
Soluble Pacific Guano, per ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone.....	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs.....	26.14
do. do. Grain and Grass, per 1,000 lbs.....	25.00
do. Fruit and Vine Manure, do.....	17.50
do. Bone, strictly pure, meal..... per ton.....	42.00
do. do. do. extra fine..... do.....	40.00
do. do. do. do..... do.....	38.00
do. do. do. medium..... do.....	36.00
do. do. do. dissolved..... do.....	42.00
Stockbridge Corn Manure, per acre.....	20.00
" Potato do do.....	10.00
" Tobacco do do.....	50.00
" Rye do do.....	10.00
" Wheat do do.....	15.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Gypsum, Nova Scotia, ground, per ton.....	8.00
Nitrate of Potash (95 per cent.), per lb.....	9 @ 9½c.
Sulphate of Potash (potash 44 per cent) per lb.....	3½ @ 4 c.
do. do. (potash 27½ per cent) per lb.....	1½ @ 2 c.
German Potash Salts (potash 12 to 15 p. c. p. ton.....	\$15.00 @ \$18.00
Muriate of Potash (potash 50 per cent), per lb.....	2 @ 2½c.
Nitrate of Soda, per lb.....	4 c. @ 4½c.
Sulphate of Ammonia (21 per cent.), per lb.....	4½c. @ 5 c.
Dried Blood (ammonia 14 per cent) per ton.....	\$45.00 @ \$50.00

"Big Head."—"A. V. C." Pensacola, Fla. This is a disease of the bones of the head, and consists of a spongy growth of bony matter, which not only injures the jaws or the skull, but causes tumors and abscesses in the muscular covering. As these abscesses have their origin in the diseased bone, they can not be cured by any direct treatment of them alone. The diseased bone must be cut away. As it is obvious that, to remove the bone of the skull or that of the jaw, would seriously affect, if not fatally injure the horse, this disease is classed among those which are incurable, except through a favorable natural action by which healthy bony tissue may be deposited, and the disease cease. The trouble is constitutional, and scrofula is generally the predisposing cause. No amateur treatment can be recommended. The advice of a competent veterinary surgeon should be sought. We are aware that such advice as this is difficult to get, but it is to be hoped that it may not be many years before skilled veterinarians may be available, and that their need will be recognized.



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the American Agriculturist, containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.60 per volume.

The Latest Crop Reports to this date (July 16) are generally very good. The fears that the open, mild winter, and early, warm spring would be followed by a cold, wet summer, have not been realized. The hot weather during the last of June and the fore part of July, was just what the corn-crop wanted, to push it ahead rapidly, and, with the large acreage, the yield will be very great, if it is not cut down by unusually early frosts. The favorable weather also helped to filling out the wheat at the North, where it was not ripe. The later rains of the second week in July, while interfering with wheat-gathering somewhat, came just in time to avert the parching effects of the hot spell. Thus far, we have every indication of considerably larger yields of the great staple crops even than last year, taking the country as a whole; there are exceptional places where storms, insects, worms, etc., have injured the crops. These magnificent crops, while tending to lower the prices per bushel to be obtained by the producers, yet furnish a fair income from the large quantity, and an abundance of cheap food will help out manufacturing and other pursuits, and tend to set in motion the wheels of industry generally; more products to be moved by railways, means more iron to be used, and more manufactured products to be consumed. This wealth from the soil will tell strongly towards a recovery from the depression of the past five years. Our wheat and corn, however abundant, cannot sink in price below a certain figure, for the lower the price, the greater will be the foreign demand, as well as the larger the consumption in our own country, which will prevent any disastrous fall in prices.

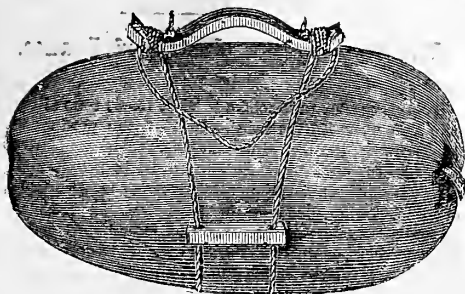
Railroad Crop Reports.—The Chicago and Northwestern Railway Company has inaugurated a most important system of gathering accurate reports of the condition of the leading crops, from the hundreds of stations along the great extent of road it owns or operates. The strict discipline among railway employees, enables the managers to gather very complete and systematic reports, and it is desirable that every principal railroad running through agricultural regions should adopt the practice. From the reports of the C. & N. W. R. R. for the early part of July, we learn, that from 266 stations where wheat is the main crop, 102 report the wheat above the average of last year's large yield; 126 report it as good; and only 38 as not so good. Of 273 stations where corn is the main crop, the acreage reports from 139 stations are larger than last year; 133 about the same, and 1 below. Of its condition, 12 report it better than last year, 155 as good, and 106 not as good. The recent hot weather has doubtless greatly improved the corn crop generally.

A Selection of Roses.—A correspondent in Iowa, apparently a beginner in business, asks us to give a list of the best "Hybrid Perpetual" roses, the best white, the best crimson, the best climber, etc. He says that "the American Agriculturist" has been worth a small fortune to me; and though we are desirous of aiding so appreciative a correspondent, he has proposed a very difficult task. The rose catalogues number thousands of varieties, and each year twenties, if not hundreds, are added to the list, hence, to give a list of "the best," is a matter almost impossible to one who is not a "rose fancier." We can perhaps help our friend by giving him a list, if not of "the best," of really good sorts. The name "Hybrid Perpetual" is a thorough misnomer—so far as the "perpetual" goes, and if we wish a succession of bloom, during summer and autumn, we must take China and Tea roses, which are not usually hardy. These are generally smaller in flower, and of less vivid color than the others, but they bloom almost continuously. As to the "Hybrid Perpetuals," for which the better name is "Remontant," we should for six, well established and standard kinds, take *Baronne Prevost*, pink; *Charles Lefebvre*, reddish crimson; *General Jacqueminot*, richest crimson; *Madame*

Lacharme, white, with a blush of pink; *Madame Victor Verdier*, brilliant earmine; *Paul Neyron*, rose, and of great size. We might go on and pick out other sets of six, but we should not like to be without either of the above. As to the best white rose, perhaps *Madame Planter* will give most general satisfaction. It is classed as a "Hybrid China," is with us perfectly hardy, and though the flowers are not very large, they are in great abundance. Several climbing remountants have been offered of late years, which we have not tried. The best climber we have is *Queen of the Prairies*, for vigor and abundance of bloom, but the *Gem of the Prairies*, fairly vigorous, is fragrant, and on that account preferred by many. As to crimson, *General Jacqueminot*, already mentioned, is one of the reliable sorts; it is not so double as some, but a free bloomer, and most brilliant. We advise our Iowa friend to get the catalogues of those dealers who make a specialty of roses, and to test those varieties which promise to be hardy in his severe climate.

Agricultural Education at the Mass. Agricultural College, has at last been placed practically on the basis of free tuition by a recent action of the trustees, who voted "that each graduate [of which there are now over 150] of the institution be allowed the privilege of nominating one student to a free scholarship for the full course of four years." A friend has also offered to pay the tuition for the course of every worthy student presenting himself for admission to the next class, who shall meet the requirements as to scholarship, etc. The expenses of living have also been so reduced, that the cost to those having the scholarships need not be over \$150 a year, a portion of which can be earned by work upon the farm. A farmer's son, or any young man who desires to get a good agricultural education, has in these offers an exceptional opportunity. Applicants should address President W. S. Clark, Amherst, Mass.

How to Carry a Watermelon.—We feel very sure that when a thing is really needed, it will be supplied by some inventor. No one article in the market is more unmanageable than a watermelon. There was no difficulty in raising watermelons in Florida and Georgia, no trouble in placing them on sale in New York—and good melons too, by the way—at about the time that people in the vicinity were putting in their seeds. Melons were easily raised, easily transported and placed on sale, but there was a great obstacle to selling them, and that was in the melon itself. It was too large for the average basket, too troublesome to carry under the arm, and though it might be easily carried on the shoulder, the people would not "tote." In short, there must be an easy way of carrying melons, or they must remain unsold. Last season melons were offered, lashed with tarred spinn yarn, evidently the work of sailors; this helped somewhat, but this year the fruit has appeared, furnished with a regular handle. Evidently the idea was borrowed from the now popular shawl-strap. At all events, some genius has hit the popular want, and supplied what nature failed to do, a handle, by which the watermelon can be as easily carried as any other parcel. The essential part is the handle made of bass wood. This has a sufficient supply of strong twine, and two "beckets" of the same wood to distribute the pressure.

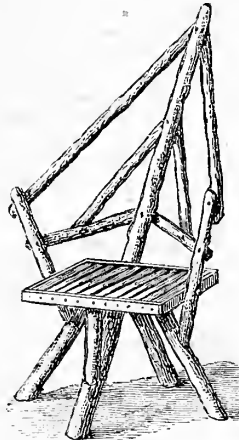


When the melon is harnessed and ready for travel, it appears as in the figure. We have more than once said that the raising of vegetables and fruits was a small matter, as compared with the proper selling of them. Some genius, by means of this simple contrivance, has greatly facilitated the selling of watermelons, and has thus added to the value of many acres in the Southern States.

About Preserving Green Corn.—We have several times stated that we knew of no method of *canning* green corn that was practicable in families. Mrs. C. C. R., who writes a very pleasant letter, thinks we are in error in this, and sends us her method, which is not in the proper sense, *canning* at all, but a method of *pickling*. By *canning* fruits or vegetables of any kind, we understand the putting of them up by the thorough exclusion of air, with sugar, salt, or other seasoning sufficient to make them acceptable when eaten; but which has nothing to do with their preservation. Mrs. R. uses

tartaric acid, which is really *pickling* the corn, just as other vegetables are pickled in acetic acid, or vinegar, but it is not *canning* the corn in the proper sense of the term, or by the method followed by those who put it up for market. We have, in former years, given the method of preserving green corn by means of salt, and also by the use of tartaric acid, but as this last was several years ago, we give Mrs. R.'s method, with the remark that it has been commended to us by several other housekeepers, though we never happened to try it ourselves. It is really *Pickling Green Corn in Tartaric Acid*. Mrs. R. says: "Cut the corn from the cob, and cook it in a plenty of water for about 5 minutes. To every 6 quarts of corn (measured before cooking or adding water) add one ounce of *Tartaric Acid*, dissolved in a little water. Put the acid in while cooking. Dip into the cans, and seal immediately. It will keep for years. To prepare this for the table, pour off the sour water (which is to be saved), and put in fresh cold water. To a quart of corn add half a teaspoonful of soda, and a teaspoonful of sugar. If you should add too much soda, the corn will turn yellow. In that case, add enough of the acid water (to be saved for the purpose) to turn it back again to the proper color."

A Rustic Chair, Easily Made, and quite ornamental, in even a small lawn or yard, is here illustrated. The sketch is from a chair we saw on the grounds of Dr. R. S. Bacon, at Finsling. It is most durable if made of cedar, but any wood will answer. The main piece is a pole say $4\frac{1}{2}$ feet long, $3\frac{1}{2}$ to 4 inches in diameter at the base, and an inch less at the top. This stands inclined 25° to 30° from a perpendicular. Three other short pieces nailed upon it, supply the necessary legs or supports. The other round sticks are added as shown. The seat has four side-pieces, filled in with the parallel pieces which are nailed to the front and rear border piece. The side pieces come forward far enough to supply arm rests. The whole is made of round, undressed limbs, or small saplings, nailed together. A hatchet to cut the sticks, with hammer and nails to fasten them together, are all the tools needed. Any smart boy can put together a trial chair, on a rainy day, and afterwards make up as many as he chooses from any wood.



Remarkable Shooting.—On July 13 we witnessed for an hour the shooting feat of Dr. W. F. Carver, who during 7 hours and 38 minutes (or 8 hours and 10 minutes, including resting spells), fired 6,212 times at glass balls flying in the air. Of these he hit and broke 5,500, and missed 712. He attempted to break the 5,500 glass balls in 500 minutes, and accomplished it in 489 minutes (11 A. M. to 7:30 P. M.). The wind blowing from the front drove much smoke into his eyes, causing many of the misses. Those present at the finish say he seemed to suffer no inconvenience from the effort, except that produced upon his eyes by the smoke. The glass balls were $2\frac{1}{2}$ inches in diameter, and filled with feathers, which flew out in all directions, as the balls were broken. They were tossed up by hand 20 to 30 feet in front of him, and each ball had to be aimed at and hit on the fly, with a single bullet (not with a handful of shot), and between each shot the gun was lowered, the old shell thrown out, and a new one inserted, and the gun then raised and aimed. We noted several instances where 16 shots were fired in 19 to 24 seconds. As the loaded rifle weighs 10 lbs., the raising of the gun 6,212 times was equivalent to lifting 62,120 lbs., or 31 tons. The strain upon the eye and nerves of taking sight so many times must have been very great. This experiment shows the power of endurance which the human body and mind are capable of, and in this respect is interesting. It can be of little practical utility for others to learn to shoot on the wing with the rifle.

Another Clover-Weed Seed.—On p. 103, March No., magnified engravings are given of the seeds of the weeds common in clover in this country as well as in England. It is there remarked that some of the commonest weeds of the English clover fields are scarcely known here, while we have a number of pests unknown in England. We expected that the article referred to would cause our readers to look sharp to their clover-seed, but some have anticipated us, and long before the article reached them, several have forwarded us samples of clover-seed, to inquire as to the foreign seeds mixed with it. Two or three of these samples contained a

small flattened, shining black seed, shown in the engraving here given, of the natural size, and magnified. In one case the clover contained so much of this as to attract the attention of even the most careless. The seed is evidently that of one of the "Knot-weeds," or *Polygonum*. The genus *Polygonum* is a large one, and includes species very unlike in appearance, from the little "Knot-grass," or



"Door-weed," (*P. aviculare*), round in almost every yard, up to the showy "Ragged-sailor," or "Princes' Feather," (*P. orientale*), often seen in old gardens, and growing 5 to 8 feet high. Other well-known species are the acid "Smart-weeds," or "Water-Peppers," of which two are common in moist places. Another very frequent weed in fields and gardens, is a branching species 2 feet or more high, with a usually reddish stem, and leaves shaped so much like those of the peach that it is named *Polygonum Persicaria*, and is known in England as "Persicary," or "Peach-wort," but with us, on account of a large blackish spot (usually present) in the center of each leaf, as if it had been pressed by an inky thumb, it is in this country usually called "Lady's Thumb" and "Black Heart;" its small greenish purple flowers are crowded in close oblong spikes at the ends of the branches. Besides this, there are three other species of a very similar habit and aspect, and only distinguished from this by botanical characters, which we need not give, for so far as the cultivator is concerned, the plants are practically alike. All have similar seeds, though differing in size, and some minute particulars, but they are sufficiently like the seed here engraved, (which is apparently that of *P. Persicaria*), to allow them to be recognized under the *American Agriculturist* Microscope. They are all annuals, and on that account less to be dreaded than some perennial weeds. But they are *weeds*, and will, if each one gets a start, occupy the place that belongs to a clover plant. For this reason, clover-seed that contains *any other seeds* than clover, is to be regarded as foul, and should not be sown. It is true that there is a choice of evils, and these weeds are of little importance as compared to "Viper's Bugloss," Toad-Flax, "Canada Thistle," and others. Still they rob the crop of nutriment, and rob the farmer by occupying the land unprofitably. *Sow clean seeds.*

Basket Items continued on page 313.

Sundry Humbugs.



In our warnings against humbugs, we have confined ourselves to those practised upon the community in general, and especially upon the agricultural or rural portion thereof. By doing this, we leave the field of special humbugs untouched, for there is hardly a general occupation or trade that is not afflicted by its peculiar frauds. In investigating the various humbugs we are brought in contact with local as well as United States officers, from whom we sometimes learn new and special forms of rascality, but as they do not, as a general thing, affect the readers of the *American Agriculturist*, we do not mention them. Among the specialties are the various tricks played upon

KEEPERS OF HOTELS;

indeed one of these has become a regular thing with a certain set of sharpers. As keepers of hotels, especially in small towns, are farmers also, and a good number of them are readers of the *American Agriculturist*, we give an account of one which has recently been the means of swindling many inn keepers, especially in the Western States. Scene, a hotel in a small town—but a flourishing town—in Illinois. A young man arrives, calls for the best room in the house. He enters his name in a bold hand on the register as Turner, of the jewelry house of "Smith & Co., New York. Manufacturer at Providence, R. I." The first thing he asks for is letters; finding that there are none, he particularly inquires of the times for the arrival of the mail, as letters of great importance were

to meet him there. Has had a dusty ride, it is some time before the dinner hour, and he orders a bottle of the best wine in the house; he does not like to drink alone, and the landlord must help him dispose of the bottle. The young man's chief want seems to be letters, and all the next day he asks at every mail's arrival for letters. At last the looked-for letter comes, he hastily opens it in presence of the landlord and takes out a check. He curses the stupidity of the cashier of the house in New York. "He might have known that there was no bank at this place. I charged him to always send money in a registered letter, and here is a confounded useless check (for \$100 or \$200, as may be). I am notified that a case of samples are sent to — (the next town), where I must go at once, and here I am with nothing but this check." And more of the same sort. The landlord is good-natured, the young man is good looking, and free with his wine, and the chances are that the landlord ends the young man's trouble, and offers to cash the check—minus the young man's wine and board bill. Young man is very grateful, gets his check cashed, and starts to the next town for his samples. But he does not stop there, he goes on to some other place, as may have been agreed upon, where the same game is played over again; the same anxiety about letters; the same disappointment at receiving a check instead of money, in a town where there was no bank, etc., etc. As the checks are drawn on some New York Bank, it is a number of days before the landlords discover that they are mere worthless paper, and the young man, who, of course, never goes where he says he is going, is far out of reach.

A LARGE NUMBER OF LANDLORDS

in the Western States hold the worthless checks of "Smith, Melville & Co., Manufacturing Jewellers in New York; factory at Providence, R. I." But of course the name is changed from time to time. We have some of the checks, and can say that, taken as checks, they are very pretty.... Here we have again

CLARK & CO. WITH A NEW NAME.

In some branches of science there are books giving synonyms, or the different names by which an animal or a plant has been called. We shall soon need such a list for Clark & Co.; it would include Russell & Co., Hetheridge & Co., Keyes & Co., and we now have to add W. P. McCall, who hasn't a bit of a "Co." to his name. But W. P. still sends out the same persuasive circular headed "A Decision at Last," and informs people that they can get "One lot of Gold Jewelry (60 Different Pieces), valued at \$220.00," and that "the percentage due is \$11.00." W. P., that, in these hot days, is a little too much for such jewelry as yours; seventeen cents apiece for Jewelry things! We can go down into the back woods of Maine and beat you as to price. No wonder your concern changes its name so often if it asks so much for Jewelry. One of our friends at Seekonk, Mass., is not a little indignant that W. P. McCall should have sent him—who never bought a lottery ticket in his life—a circular pretending to adjust some old lottery claim. This is nothing to the case of one of our friends, who is one of the most steady and steady going of the Society of Friends, who received a letter asking if a certain signature was his, and if so he was entitled to certain mining shares! It only shows that these chaps who buy their old letters by the thousand, for the sake of the signatures, are liable to occasionally "wake up the wrong passenger.".... The circulars of that

CINCINNATI ART CONCERN

now begin to come in from the Pacific coast. We can only say to our friends there, as we have to those nearer home—Don't. These people profess to have had a "drawing," and anything that looks like a game of chance should repel all right-thinking people. The pictures said to be drawn, are sent for a charge for packing, and there will be the express charges to Oregon, etc., besides. We feel very sure that nothing can be sent under these terms worth paying the freight charges on.

THE NON-EXPLOSIVE POWDER CHAP

is around in Central New York with his stuff to put into kerosene lamps to prevent explosions. It seems that this humbug is not dead yet, though we several years ago showed that the powder was only common salt, colored with a little Prussian blue, or cheap ultramarine. It can have no possible effect upon oil, and if it induces people to use poor and cheap oils, it is murderously dangerous. The only safety is in good oils and good lamps. Nothing can make poor oils safe.... A Vermonter saw in a leading agricultural paper an attractive advertisement of

"CRYSTAL GLASS GOBLET,"

which he ordered. After much delay, he received a half dozen, costing him, including express charges, \$2, and he found them such goblets as he "could buy at any store for a dollar a dozen. He thinks it very wrong for the paper to publish such an advertisement. We think so, too; but as the advertising columns of our own paper are all we control, we don't see how we can help him. ... We have had occasion to refer to the

NOVELTY CATALOGUES,

so called, in general terms, but to specify these would but serve to advertise them. Some of them are pamphlets of 30 or more pages, and offer a remarkable lot of articles, some of which are mere toys, or harmless enough, but intermingled with these—and hardly concealed by them—are offered things of the most pernicious character. For example, in a publication of this kind now before us, we have offered: "Spy-glasses, an article valuable to every farmer;" next, several trashy hooks, and then "Transparent Cards," which it is not necessary to describe to those who know what they are, and those who do not know them, get a very broad hint in the information that the pictures "are of such an intensely interesting character that our agents retail them at fabulous prices." Every possible trick is resorted to, to get the addresses of school-children of both sexes, and they are then plied with advertisements of the kind above quoted.... Here is a letter from a lawyer in Washington Territory, from which we infer that one of his clients has received

"A PACKAGE OF JEWELRY"

from one of the many dealers in the bogus article in New York. The lawyer asks us to investigate the matter, and if we find the concern to be, as he believes it, a fraud, to expose it.—No, we thank you. It is altogether too hot weather for us to go up towards Union square, to learn what we already know. We know that a concern that sends jewelry to one who has not ordered it, especially of that kind which sells for \$30, and will bring at retail \$135, need not be looked after. It is an old dodge. A bogus jewelry chap on Broadway sends to J. A., in Washington Territory, a parcel by express. J. A. receives parcel, pays charges on it. In due time a bill comes, which J. A. does not pay. After a while comes a shyster lawyer, to collect the bill; he can prove that J. A. took the parcel from the Express office; the presumption is that he ordered it, and the chances are that he will have to pay for the stuff. The only safe way is, not to receive packages from the Express, unless one has been previously notified of their contents. We are informed by an officer of wide experience that some of the subordinates in the Express offices—well, to say the least—do not try very hard to prevent such swindles as these of forwarding packages of jewelry to those who have never ordered them—Moral:

SCRUTINIZE ALL EXPRESS PARCELS

with care.... So many letters on medical matters had accumulated that we last month treated them in a special article on "Medical Matters," and so

ON GENERAL PRINCIPLES,

we advise every young man who thinks he has some trouble—we say, "thinks," for such troubles are largely imaginary—to let alone an "doctors" and combinations of doctors calling themselves "Institutes," and advertising to cure such troubles. We do not know that all are equally vile, but we have known of cases in which chaps, calling themselves "doctors," and "Institutes," have threatened to expose young men with unfortunate, but not immoral troubles, to their families and friends, except for a certain weekly pay. Any one who advertises to cure any particular disease, at once cuts himself off from all fellowship with regular medical men, and is an outcast from the profession. Have nothing to do with such, whether they are banded together, or prey singly on the unsuspecting, but go to some real physician, in whom you can have confidence, and let all advertisers thoroughly alone.... Abbey, the Buffalo quack, who has, under pretence of sending a

PUZZLE PICTURE,

succeeded in bringing his nasty book to the knowledge of decent people, claims to have sent out millions of his "Toll-gate" pictures. His dodge is to offer a "puzzle picture," and family and religious papers have advertised it, apparently without question as to what it would lead to. A very coarse "puzzle" picture about the size of an ordinary envelope is sent, and on the back are the announcement of books and medicines, such as no decent person has any need of, and which young persons need know nothing about. The chap is out with a new picture, which he sends to every post office in the country for distribution. The P.M. at a small office in Massachusetts writes that hundreds have come to his little office in packages of 25 or 30, with a request that they be distributed. We are glad to know that there is one Post Master—no doubt there are hundreds more—who will not engage in any such dirty work.... "A Victim" in Penn. writes that he has taken half a dozen bottles of some

"ANTI-FAT" COMPOUND,

with a view to reduce corpulence, and that while taking the stuff he has gained just ten pounds! and asks what he shall do. Evidently one thing to do is to stop taking the stuff. He may, no doubt, find useful hints as to diet and exercise in Banting's work on Corpulence, which has been reprinted in this country. Our general advice, to take no secret compound whatever, applies here....

We thought that the medical part of our budget was of a rather tame kind—but we were wrong. Here we have that in "The Little Blue and White Book," which we only before had in a poor shabby black and white circular. It is:

"NARROW ESCAPE FROM DEATH.

TRUTH STRANGER THAN FICTION—(If we mistake not that has been mentioned before)—THE TRUE HISTORY OF UNOKAS PILINDIAS. That is all on the "Kiver" in blue and white—and very pretty it looks. We read on the first page on the inside "Truth Stranger than Fiction," which we insist is not an original remark, and "Mistaken Identity of a Disease we are all subject to. How, after two years of suffering, the Patient was cured by an INDIAN SQUAW"—it is a touching story, and we have already told it in these columns. Like all such stories it has its moral, which is, take "Unokas Pilindias and Live"—or "Neglect them and Die." It is too hot this July night to think which we will do, but as for Unoka, "Inventor of Unoka's Pilindias," of whom a portrait is given, she looks as if, had she turned her hand to it, could do a powerful amount of washing. But on the last page of the cover we have a portrait—not of Miss Unoka Pilindias again, but of her arm only. We know it is hers, not only because it is so labelled, but from the big development of muscle, which could only come of washing; that arm has a hand, and that hand squeezes five snakes, such as were never seen before: She has an awful power of squeeze, and the way she makes them snakes spout fireworks is just stunning. There is a most pathetic appeal on the last page of this pamphlet to "Dear Reader":—the writer believes, or says he does, that should we have "any of the complaints referred to in his little blue and white book, we will give Unoka's Pilindias a trial"—to which we say most assuredly not. We shall avoid, and advise all others to avoid all such out-and-out quackery.

Oleomargarine and the Butter Market.

—It is worth while for dairymen to consider whether present low prices of butter and cheese, are influenced by oleomargarine. Years ago the *American Agriculturist* pointed out the certain result of its competition with honest butter and cheese; viz., lower prices and difficulty of sale. Now the truth of the statement is apparent, and even the gilt-edged product of the dairy, which cannot be produced for less than 50 cents per pound, goes a begging at 25, while the "Dairy Company's" product, oleomargarine, butterine, and other compounds of rendered fat and soiled milk, are driving true dairy butter out of the market. Well, perhaps dairymen have none to thank for it more than themselves. Their leaders in conventions, have glorified and advertised this stuff; professors have "assayed" upon it, and have proved in the very teeth of its natural opponents, that it was really as good, if not better, than genuine butter; that it possessed all its virtues, and none of its faults; while dairymen stupidly let this thing go on, and permitted the oleomargarine men to flich away their markets, and customers. If dairymen have been willing, who shall say nay? but on behalf of the innocent consumers, we continue to protest, and shall continue, while waste fat is palmed upon them for pure butter.

The Beet-Sugar Industry of France.

In 1824, France produced a total of 15,000 tons of beet-sugar, in over 100 factories. In 1837, the product was 49,000 tons. France, since that time, has doubled the product of beet-sugar every ten years. In 1820, the product was only 2 lbs. for each inhabitant; in 1865, it was fourteen pounds per capita. Since 1865, except in the immediate vicinity of the seaboard, no sugar is seen or used in France except the beet-sugar. The same is true of Germany. This is almost the only sugar used in Paris, Vienna, Berlin, Dresden, Leipsic, or Munich. In 1837, the yield of beets per acre was twelve tons; price \$3 per ton. In 1865, the yield was sixteen tons per acre; price \$3.25. The percentage of sugar contained in the beets, in 1837, was 10 per cent; in 1865, 11½ per cent. The cost in 1837 was 7 cts. per pound; in 1865, it was reduced to four cents per pound. Thus, it has required nearly a half century to establish this great and valuable industry on the Continent of Europe, on such a basis as to defy competition, and we now have the benefit of their experience. It has been the result of careful and continued attention to thus increase the product, as well as the percentage of sugar in the beet, and this by studying carefully its natural laws, and by the application of chemical knowledge and mechanical ingenuity to extract the sweet therefrom, to purify it, and render it suitable for the most fastidious tastes. This sketch, while relating mainly to France, applies also to the rest of Continental Europe: France only led in the race. Such is a brief history of the growth of the

industry up to 1865, and since that time its continued success is shown by the following statistics: Total product of beet-sugar in 1853, 200,000 tons; total product of beet-sugar in 1863, 452,000 tons; total product of beet-sugar in 1873, 952,000 tons. It may be considered as one of the established industries of the temperate zone, and only awaits the judicious application of capital and labor to establish it on any suitable soil, and in any proper locality. The permanent effects produced on agriculture in France by the cultivation of beet-sugar have been astonishing. In the cane-sugar districts, no other crop is to be seen, while cattle, sheep, and hogs are few. In the beet-sugar districts of Central Europe, on the contrary, the fields are crowded with the greatest diversity of crops, such as beets, wheat, rye, oats, barley, etc., as well as all of the cultivated grasses. No farmer there need to be told which system is the most enduring. On a great public occasion, the following significant inscription was placed on a triumphal arch: "Before the manufacture of beet-sugar, the arrondissement of Valenciennes produced 695,590 bushels of wheat, and fattened 700 oxen. Since the manufacture of beet-sugar was introduced, the arrondissement of Valenciennes has produced 1,157,750 bushels of wheat, and has fattened 11,500 oxen." A farm of 832 acres in France, the product of which, with the ordinary farming, amounted to \$5,000 per annum, with six years of beet-sugar cultivation, produced \$41,200 per annum. Another farm, of 295 acres, produced 5,225 bushels of wheat, 2,500 tons of beets, and fattened 150 head of cattle, per annum. The farmers attributed their success as cultivators entirely to the immense amount of barn-yard manure, which the beet-pulp gives to the stock, enabling them also to effect an improved condition of the soil. The improved and increased amount of profitable culture of the land consequent upon beet-culture is now universally acknowledged, and wherever the beet is cultivated, lands advance in value, and wages take the same direction. Cows fatten upon the leaves and pulp, and also produce more and better flavored butter and milk than when fed on grasses; so that the production of sugar from the beet adds to the supply of bread, butter, and meat; and these—the leading necessities of man's existence—stimulate and aid each other.

Varieties Used—Harvesting and Storing the Crop.

The varieties of sugar-beet most extensively used are the White Sugar, or Silesian, the Imperial, and the Quiddlingburger, and they penetrate the soil from eight to twelve inches. The most desirable weight is from 1½ to 4 pounds each. Their greatest diameter is from three to six inches. Large or overgrown beets are very poor for sugar. If the soil is cultivated to a suitable depth, the beet-root will grow entirely beneath the surface; but when the ordinary cultivation is used, being unable to attain its length below the surface, it will extend above the ground; where, exposed to the sun's rays, it is injured, and less productive. Any soil that is suitable for wheat, which has been under cultivation—the longer the better—that admits of deep tillage, clear of stones, with a clay tendency, is suitable for beets. The soil of Maryland is well adapted for growing beets, and, in fact, many parts of nearly all the older States of the Union; and the industry ought to be generally introduced into this country at an early day.

AN OLD FRENCH FARMER.

Some Bee Notes for August.

BY L. C. ROOT, MOHAWK, N. Y.

Since the writing of July "Notes," the outlook for beekeepers has assumed a much more encouraging aspect. The very warm days of the last of June and the first of July, have, in a degree, retarded the rapid gathering of honey. During extremely warm weather, great care should be taken to ventilate each hive, and to keep the apiary shaded from the direct rays of the sun, as the combs are liable to be melted down. Follow directions given last month, and remove box-honey from the hives as fast as the boxes are well filled. In localities where buckwheat and other late forage abounds, the boxes removed may be replaced with empty ones. Each beekeeper must learn the honey resources of his special locality, and not continue adding boxes too late in the season, as the boxes may not be filled, and hence may get soiled and unfit for use. After removing boxes, the bees may be driven from them with smoke; or the boxes may be placed in an empty hive, box, or barrel, and a cloth thrown over it, leaving a slight opening at one side, where the bees may pass out and return to their hives. Box-honey should be examined occasionally, to see that the moth-worm is not injuring it. If only a few are found, they may be removed, but if badly affected, the worms should be killed by placing the boxes in another box, and smoking them with brimstone. Care should be taken not to extract the honey from the body of the hive,

so late in the season that the bees can not gather a sufficient amount to winter upon. Allowing bees to swarm late is often objectionable for the same reason. We should have the requisites for successful wintering in mind, even at this time of the year.

HONEY YIELD.—I have selected a very strong swarm of Italian bees, and have given it very particular attention, furnishing extra combs from time to time, and, in fact, have endeavored to secure the most favorable conditions in every respect. At present, it contains thirty-two (32) movable combs. I propose to extract the honey from these combs, with the honey extractor, during the entire season, returning the empty combs to be refilled; and will report dates and amount of honey taken at each time for the benefit of the readers of these "Notes." The first honey was taken July 5th, amounting to 90 lbs.

How the Fourth was Celebrated at "Houghton Farm."

Those who think that the national holiday can only be properly celebrated by going somewhere—anywhere away from the farm, and that a plenty of powder and punch are necessary to a proper enjoyment of the day, may take a hint from the manner in which the last Fourth was celebrated at "Houghton Farm." This farm is a beautiful spot among the mountains of Orange Co., N. Y., and is likely to be heard of hereafter by the readers of the *American Agriculturist*. Suffice it to say for the present, that, taking all its departments together, a goodly number of hands are employed, the head farmer, and some others, having families upon the place. The Celebration was quite impromptu, and owed its success to the heartiness with which all entered into the scheme. There were the proprietor, his family, and his guests (of which the writer was one), and the various farm hands, conspicuous among whom was the head stable-man, the prime mover in the out-door sports, one and all bent upon having a good time—each one being desirous of doing something to help. Where such a spirit prevails, each desirous to please, and of being pleased, the rest is not difficult. The very near neighbors were invited, and as those farther away had wind of the doings, there was, by 4 o'clock, quite a large assemblage in and around the field where the first performances took place. Friendly clouds made active exercise tolerable, and the young men, encouraged by prizes, which ranged from small sums of money, to "the makings" of a corduroy suit, entered into the sports with a will. First came a game of "Blind Man's Buff," in which each blinded man had a straw-stuffed canvass club, with which he was to hit one of the number who was not blinded, and he carried a bell as a guide to his whereabouts. There was, of course, much hitting of every one but the right one, and much amusement was afforded. Then there was a foot race of 100 yards, in which length of leg plainly told. In contrast came a sack race, wherein a dozen, each with legs and arms confined in a sack, started, while but few, on account of tumbles, reached the mark. Next there was diving for a coin at the bottom of a tub of water, the winner to fish it out with his mouth. This, which made great sport, was followed by a wheel-barrow race, in which the blind-folded contestants showed much skill. The last, and most amusing race was of 25 yards, each one carrying a pail of water on his head; the one who had the most water in his pail on reaching the goal, being the winner. There was of course much spilling of water and wetting of clothes, but there was much fun also, and those who came in the wettest seemed to laugh the most heartily. The contestants in these games, and others, were considerably supplied with iced "switchel" (molasses and water spiced with ginger). The crowning portion of the out-door sports was a tub-race, participated in by three guests at the farm. This took place in Awassema Creek, and, like all such races, was a series of false starts and complete duckings, which, though exceedingly laughable, need not be recorded. Suffice it to say that a gentleman connected with the *American Agriculturist* is the happy possessor of a genuine tin cup, as a mark of his prowess in the tubby line. The tub-race ended the daylight amusements. In the evening there was another gathering in front of the dwelling house, where a part of the broad veranda had been enclosed to form a stage for the exhibition of shadow-pictures and tableaux, which were presented by the members of the family and visitors to an audience which included those who had taken part in the day's sports, and the neighbors. The most pathetic history of Mary Jane, and other things, were effectively shown as shadow-pictures. Songs were sung. The lady of the house read the old story of Geneva, but ever new as told in Rogers' verse, as a prelude to a beautiful tableau picture of a bride. The appearance of one of the young ladies as the Goddess of Liberty excited much enthusiasm, which found vent in the singing of the "Star Spangled Banner" by the company. At length the "Flower of the Family"

appeared with a "good night" candle, when the audience left after singing "America," and showing their appreciation by hearty parting cheers.—Here was a celebration which was enjoyed by many, brought no risk of fire, and did not cost one-twentieth of what is usually spent in fizz and bang. It was extemporized from materials at hand, and with the desire to please and readiness to be pleased on the part of all, was a real success. We give this brief account of it, that those who may next year be puzzled to know "what to do on the 4th," may profit by the hint; for such a completely successful, really pleasing, yet quite inexpensive and thoroughly harmless celebration as that at "Houghton Farm," is possible on many a farm throughout the broad land, and if not always practicable upon a single farm, a neighborhood celebration may be carried out upon the same plan.

Thinning Roots.—The yield of roots, as well as their feeding value, depends largely upon a proper thinning of the plants. Large roots are by no means worth the most. In an experimental crop, grown in England, small Swede turnips which yielded 20 tons per acre, were found to contain as much dry substance as large ones which yielded 40 tons per acre—the excess of 20 tons being wholly water. The small plants were thinned out to a few inches apart; the larger ones to 14 or 16 inches. As the thinning of root crops should be done at once, these facts are worthy of notice and consideration. When the crop is in vigorous growth, the plants should be thinned so that those remaining may have a space between them equal to their own diameter, and no more. This will prevent overgrowth, and cause the roots to be solid and well shaped.

Western Immigration.—The unexampled increase in the current of emigration westward of the present season, is remarkable. A fair idea of the extent of the movement, may be gathered from a statement of the sales of land by land grant railroads during the first four months of 1878, as compared with those for the corresponding period of 1877. Last year, the sales from January 1st to May 1st, were 26,601 acres; this year, 967,151 acres, in value nearly \$4,000,000. The increase is 32½ times. In this are not included the vast number of homesteads or pre-emption entries along the routes of these roads, which far surpass in number the settlements upon purchased lands. The rush westward consists in great part of mechanics and laboring men who hope to improve their circumstances by working for themselves instead of for others, and of business men who have succumbed to the pressure of too many men in trade. It is not to be feared that the great increase in production will injuriously affect the interests of farmers elsewhere. Every ear-load of produce grown in the West, or elsewhere in fact, gives work for many hands in transporting and manufacturing; it creates also a market for tools, clothes, stock, and other necessities, which in the aggregate makes employment for thousands. Thus general industry is excited, and the increased product is needed to feed those whose labor is required to dispose of it, at home, as well as for enlarging foreign markets.

More Wheat to the Acre.

That the ten, fifteen, and even thirty bushel wheat-crops are not the largest that any good wheat-soil is capable of producing, is a fact patent to every intelligent farmer; yet thousands go on raising these comparatively unprofitable crops, even though the means is at hand for largely increasing them. It is really quite within the possibilities of any farm suitable for raising wheat at all, to grow an average crop of over 30 bushels per acre; and 40, 50, and even 60 bushels may reasonably be expected under proper culture. Such crops are rather the rule than the exception on good English wheat farms, but are quite rare in this country.

The cost of fitting the soil, of seed, sowing, interest on the land, and the number and value of the stock and implements required are the same for a small as for a large crop; and the cost of harvesting is but little more in the latter case. So that

the difference between a 10 and a 30 bushel crop is nearly all profit. But how shall this extra 20 bushels profit per acre be gained? By the use of sufficient manure, to make the increase. The fact that extra manuring makes an addition to the crop which is nearly all profit, is a fact seldom realized by farmers; but such is the case, as most will admit, after considering the above statements. The spreading of six cords of stable manure on two acres of land may not produce a crop which will more than pay the expenses of its production; put the same manure on one acre, and the chances are that just as much wheat will be harvested, and at little more than half the cost. For the generality of farmers it would be a safe rule to use what stable manure they have on half the area it is now applied to. But to get the largest return from the farm, and to utilize every acre, is a laudable ambition of every good farmer. To do this, he cannot depend—as many do—on the natural fertility of the soil, or on stable manure; but he must resort to artificial fertilizers, which can now be bought with safety of reliable dealers, with reasonable certainty of getting what is bargained for. This piecing out of the farm and soil resources by use of honest manufactured manures is working a revolution in American agriculture; and in no department may it be better considered than in grain farming. In the use of these fertilizers, however, the same rule applies as with stable manure: that while a certain small amount per acre may only produce a crop large enough to pay expenses, half as much more may cause a handsome profit. We would not advise, however, that a novice in the use of fertilizers should go to large expense at first, but recommend small beginnings, though boldness may perhaps lead to a surprising success. When practicable, the farmer may make a good wheat manure of 300 lbs. of superphosphate of lime containing ammonia (i. e., made of fresh bone), or the same amount of fine bone composted for three months; this for use on an acre. Apply also—not mixing the two—all the unleached wood-ashes that can be got. An occasional liberal dressing of lime will improve wheat land which is already rich in organic matter.

But to grow wheat at a profit, the question of fertility is not the only point to be considered. In all the older States, wheat-growing, to be successful, requires the best kind of farming. The best seed must be selected: for with poor seed, the best culture practised can not produce a good crop. The variety chosen should be both prolific and hardy. The soil, as a rule, should be a fine clay loam, well drained, and contain a fair proportion of thoroughly decomposed organic matter. The plowing should be only 6 or 7 inches deep, the soil thoroughly pulverized and compact, with all the clods on the surface; the seed drilled in early, and rolled, and the rows far enough apart to admit of several cultivations. Then, with a good season, and comparative freedom from insects and disease, and the use of proper implements in harvesting, a large and profitable crop may be expected. In the virgin soils of the extreme West, remunerative crops may perhaps still be raised by the old careless methods, but the time is close at hand when all these conditions will apply there as well as in the older sections of the country.

Beet Sugar Company of Maine.—An official circular from this Company at Portland, is evidence that something practical in the way of making beet sugar in that State is intended. The circular contains directions for cultivation, and a statement that more than 2,000 farmers have interested themselves in this enterprise. The production of a sugar-beet from which sugar can be manufactured at a profit, is still a matter of experiment. The soil and climate of any locality are important points, and success cannot be assured until these are known to be favorable. The business is one in which success depends upon the exercise of small economies, as well as skillful management—for example, the utilization of the refuse pulp is a matter of no little importance. The profit in this last item alone, has often sufficed in European factories to turn the balance towards success, and neglect of it, has resulted in a failure of the whole business.

Laundry Machinery.

At first thought, one might think that very few readers of the *American Agriculturist* would be interested in steam laundry machinery; but when it is known that this journal is taken generally at all insti-

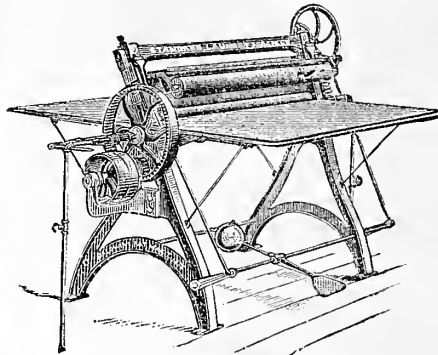


Fig. 1.—BALDWIN'S STEAM MANGLE.

tutions, such as asylums, State institutions, boarding schools, colleges, summer hotels, etc., having farms attached to supply the large number of people at such places with fresh garden and stable products—when this fact is understood, the reason is clear. The managers of these establishments find the *American Agriculturist* of great value in their farm operations, and also in their large households. As of interest to this large class of our readers, we present an illustration of "Baldwin's Steam Mangle," (fig. 1), made by the Standard Laundry Machinery Company of Boston and New York. The advantages of such an apparatus are claimed to be, the saving of labor and fuel, and less damage to the clothing smoothed. Only those who know the

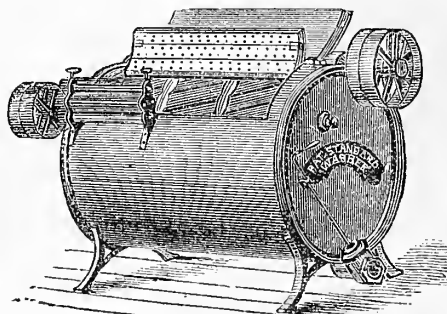


Fig. 2.—STANDARD POWER WASHER.

heat and hard work of ironing for a small family, can fully appreciate the relief that a machine like this affords when the family numbers hundreds. The same concern also manufacture steam washing-machines. Fig. 2 represents the "Standard Power Washer," used exclusively for collars and cuffs. This house also makes superior hand-mangles and washing-machines for family use.

Cow Milkers.

In the June *American Agriculturist* was published an article describing a cow milker, which operated by means of silver tubes inserted into the cow's teats, and connected with tubes of rubber. There are several milkers now offered with considerable rivalry between dealers as to the claimed merits of their respective implements, and a consequent large number of inquiries from our readers concerning them. We have so canvassed the matter as to come to the following conclusion: Several have found that, although the apparatus worked well at first, after a while it made the cow's teats sore; others find that the yield is lessened; others still use it, and have for some time, with uniformly good results, and are much pleased with the apparatus. We have seen some cows stand quietly under its working, while others were restless and dissatisfied. One of the editors of the *American Agriculturist* has had a milker in use for two months, and says of it:—"The supply of milk is steady, and there is no difference in the quantity drawn by the tubes or by hand. During the past hot weather, when the yield might be expected to

fall off, it has kept up to the usual amount. There is no perceptible effect upon the teats in any way; certainly no injury has as yet occurred. But we find it necessary to give some caution as regards the use of the tubes. The membrane lining the teats is delicate, and if the tubes are not inserted with special care, the cow resists, showing that it is painful to her. By using care, however, and giving the tube a screwing motion, there seems to be no difficulty, and the cow shows no objection." On the whole, perhaps the safest conclusion for farmers generally will be, that when the milking is done by a careful, intelligent man, without prejudice against new implements, the cow milker will be a success. But when the milking is intrusted to ordinary workmen, there are strong doubts of its being of any value as a labor-saving apparatus, even if it be not a positive injury to the cows. In short, we are not prepared to recommend any of the milking appliances so far introduced, for general use by farmers. As to the three milkers recently placed before our readers in the advertising columns of the *American Agriculturist*, we see no special merit in any one not possessed by the others, as they are essentially the same in principle. If there is any difference, it may be that the tubes described in the June number have a smoother surface and large holes, and so reduce the friction to a minimum, while still allowing a ready flow of milk and easy cleansing.

Some English Notes.

A Great Estate.—To illustrate the grand scale on which some of the English estates are laid out, I may mention that the Chatsworth Estate of the Duke of Devonshire contains 2,000 acres, which he retains for his private park and flower garden, besides thousands more that are rented for farming. His park is bounded on all sides by hills, which cut it off from the rest of the world, and no other house than his own can be seen from the windows of his grand mansion. His flower garden alone comprises 102 acres, wherein sixty laborers are constantly employed to keep it in order. The remainder of the 2,000 acres is all in grass and woodland, and stocked with deer. A forester has charge of this part of the estate, and the understanding with him is, that he shall have at his disposal all the produce from the deer—venison, pelts, horns, etc.—on condition that he shall keep at least 2,000 head constantly in the herd. The head gardener assured me that the forester's berth is a desirable one.

The Prices of Farm Produce and meat in most parts of England seem to be substantially the same as in America. In many cases, I found them less in the cities than in country towns. The farmers here labor under a great disadvantage, inasmuch as they seldom own their land, all the farm land in England being owned by only a few thousand proprietors; and they are obliged to pay the land-owner an annual rent of from £2 to £10 (\$10 to \$50) per acre, including roads, hedges, and other unproductive parts, and the payment of taxes. The Duke of Devonshire has one of the largest estates in England, and rents the whole, excepting 2,000 acres contained in his Chatsworth Park, to one person, at £2 (\$10) per acre, plus the taxes, the Duke being responsible for merely his income tax. Does the American farmer sufficiently appreciate his freedom from this burden?

The Seasons in England are very different from our own. For instance, at this time (June 10th), the farmers in Kent are in the midst of their hay harvest, and yet the wheat is no further advanced than that in New York on May 10, and they are now putting in their turnips. Potatoes are now in blossom, but new potatoes, from other sections, have been in the market for weeks.

English Farmers complain of an unusually wet season, and we can not doubt the justice of the complaint, for during the two weeks that we recently spent there, but one day passed without more or less rain. Many of the crops have been injured thereby, particularly the wheat, which is yellow and spindling, and the demand upon Amer-

ica for breadstuffs will no doubt be materially increased in consequence.

Hops.—Every considerable town in England has its Hop Exchange. Kent, which we have just passed through, abounds in hop-fields, admirably cultivated, which, at this season of the year, present a very attractive appearance. The poles are arranged in many different ways—some vertical, in single or double rows; some are leaned at an angle of 45°, while others are furnished with strings, extending to the ground, or from pole to pole.

Horse-beans are now (June 9th) in bloom in England, where they are raised very largely, and their peculiar blossoms, resembling those of the pea, but larger, and lined with black, have frequently attracted my attention. They are raised in rows, quite close together, and cultivated by hand. The beans are sometimes ground, sometimes fed whole, mixed with oats, and used as feed for horses. The production per acre is very large, and as they are considered very nutritious, it is to be regretted that they will not succeed in America.

The Red, or Pink, Horse-chestnut, is common throughout England, forming an attractive shade tree, and when in blossom there is none more ornamental. The horse-chestnut, probably owing to the less intense heat, attains here a greater size and better proportions than with us.

Dover, Eng., June, 1878.

G. W. W. H.

American Agriculturist Experimental Farm.

The Rain-gauge in connection with the Lysimeter—described last month—showed a rainfall of 1½ inch on June 21st. This indicates that there fell on the surface of the Lysimeter about 1½ cubic foot of water (or exactly 1.814 cubic feet), and upon an acre 3,000 times as much (the Lysimeter surface is 1/3000 of an acre), or 5,442 cubic feet, equal to about 170 tons of water upon a single acre; yet the Lysimeter showed no trace of water running through the soil. All of the water of this rainfall was held in the soil, the greater portion of it to be absorbed by the roots, and subsequently to pass off through the foliage of the grass growing on the land. This simple fact, recorded by the Rain-gauge and Lysimeter, tells more than volumes of reasoning about the immense importance of water to crops, and when the rains do not supply sufficient moisture, what material benefit irrigation may be to a field. We regret that this apparatus was not in position early enough to show how much water was used by the grass during the entire growing season.

The Amber Cane Sorghum is a failure this year on our Experimental Farm, owing, perhaps, to the extremely wet spring, and the natural moisture of the land. This crop needs a light, dry soil, and, for its best development, a warm spring. The failure, however, is just as instructive as a successful crop would have been, as it warns farmers not to attempt to grow this crop on heavy soils without further light, thus saving them from possible loss; and this is as much a part of the plan of the farm as to show what can be raised at a profit—"a penny saved is a penny earned." Another season's trial, however, may make a different showing, and result in changing our views of the value of the crop for such locations, as it is reported very successful in the West, on light soils, under proper treatment, and other conditions. The five acres occupied by the Amber Cane has been worked up with a Randall wheel-harrow—saving a small patch where the cane made a good growth—and fodder-corn and turnips planted, thus utilizing the fertilizer and the land, and only losing the seed and the labor expended on the Sorghum.

Hungarian grass has been planted on three acres of sod land, with different fertilizers, to test the value of the crop for our section, and its adaptability to the soil. This is now well established as a valuable fodder-crop for both cows and horses. It needs a light soil, is a very rapid grower, yields three to four tons per acre under good culture, and may be

planted any time from the 1st of July to the 10th of August. It is a good second crop, and does well on sod plowed after haying. A quick acting artificial fertilizer is the best manure for the crop—say 200 lbs. of superphosphate, 150 lbs. of nitrate of soda, and 100 lbs. of high-grade muriate of potash, per acre. In our trials of this year, we hope to learn something more definite in regard to the plant-food requirements of the crop. It should be cut while still quite green, as, if left until ripe, it has some qualities injurious to animals. When the hay crop is short, this will be found an excellent substitute to fill out the lacking supply of fodder. "Hungarian grass cut green and well cured, is used by some good Vermont dairymen as a special food for butter cows, and they claim that it has the effect of giving butter the true summer yellow. It is suggested that since Hungarian so cured remains bright and green all winter, and because one of the elementary colors which goes to make green is yellow, that it is this greenness of the fodder which imparts the yellow color to the butter."

Science Applied to Farming.—XLIV.

Formulas For Fertilizers.

Formulas for fertilizers for particular crops are based upon the principle of successful agriculture, that the soil must be supplied with the plant-food that the plants take from it, or it can not produce crops. They differ in respect to the proportions of the several ingredients which they assume, (1) that the plant takes from the atmosphere, (2) that the soil can contribute from its own stores or from what it gathers from the air, and (3) that must consequently be supplied in the fertilizer. For instance, a crop of fifty bushels of corn with the stalks would take from the soil on the average:

Nitrogen.....	75 lbs.	Magnesia.....	23 lbs.
Phosphoric Acid.....	51 "	Lime.....	27 "
Potash.....	72 "	Sulphuric Acid.....	8 "

We may make our mixture so as to furnish all these six ingredients; or we may assume as the result of general experience, that nitrogen, phosphoric acid, and potash, are the only ones the soil will fail to furnish in plenty; or that, if lime and sulphuric acid are needed in addition, there will be enough in the superphosphates and other materials used, to supply them. This plan of furnishing in the fertilizer the quantities of nitrogen, phosphoric acid, and potash, found in the crop, has been adopted by various experimenters, and makers and users of fertilizers in this country and in Europe, and notably by Prof. Stockbridge, of the Massachusetts Agricultural College. Aside from the effects of climate, physical character of soil, tillage, and so on, which affect very materially the feeding of plants and the action of fertilizers, there are two

Chief Difficulties with Formulas

for special crops. The first is that they do not take into account the materials that the soil can furnish: they can not do this because soils vary in their supplies of plant-food. Some lack one ingredient, others another, and the fertilizer which covers all cases must include materials that will be superfluous for some soils. The other applies to formulas based solely on the composition of the crop: it is that they ignore what may be called

The Feeding Capacities of Different Crops.

Plants vary widely in their power to avail themselves of the materials contained in the air and soil. Leguminous crops, like clover, will, somehow or other, gather a good supply of nitrogen where cereals, such as wheat, barley, rye, and oats, would half starve for lack of it, and this in the face of the fact that leguminous plants contain a great deal of nitrogen, and cereals relatively little. Hence a heavy nitrogenous manuring may pay well for wheat and be in large part lost on clover.

This fact is most strikingly shown in the classic experiments of Messrs. Lawes and Gilbert, in England, by bringing out the details of which, in his book on Manures, just announced by the *Orange Judd Company*, Mr. Harris is rendering to the farmers of this country most excellent service. In their experiments, wheat, which has for thirty

years received mineral manures alone, has averaged 16½ bushels per acre yearly, against 14 bushels unmanured. The addition of sulphate ammonia, with repeated cropping of the same land, brought the average up to 36 bushels per acre. The leguminous crops have told just the opposite story. Though they contain a good deal more nitrogen than wheat, they respond but slightly to nitrogen, and are greatly aided by mineral manures. In an experiment on the mixed herbage of grass land, continued through twenty years, mineral manures without potash brought up the total crop 47 per cent, and the nitrogen in the crop 38 lbs. per acre annually above the unmanured. And when potash was added to the mineral manures, the crop was 67 per cent larger, and contained 56 lbs. more nitrogen per acre than the unmanured. Such facts explain why it is such good farm practice to use mineral fertilizers, as plaster, bone, ashes, and potash salts, for mixed grasses and clover; and nitrogenous materials, like guano, sulphate of ammonia, and nitrate of soda, for grain crops. They help us to understand why clover is such an excellent preparatory crop for wheat, and so economical generally for plowing under to bring up poor soils. It gathers and stores plant-food, particularly nitrogen, and thus is itself a fertilizer.

The "Stockbridge Manures."

In the Annual Report of the Mass. Agricultural College for 1876, Prof. Stockbridge gives formulas for fertilizers based upon the composition of crops, and accounts of a long and laborious series of experiments made with them, on the College farm, in which the crops averaged better than the fertilizers were calculated to bring, with many other valuable details. These formulas provided for all of the nitrogen, phosphoric acid, and potash, contained in the crop. The precludes to the formulas read: "To produce 25 bushels of wheat and the natural proportion of straw per acre more than the natural yield," and so on for corn, clover, and other crops.

In such fertilizers the potash and phosphoric acid not used the first season, will be held by the soil until they are taken up by the crops that follow. But more or less of the nitrogen will probably be leached away in drainage waters, enter into inert combinations in the soil, or escape and be dissipated in the air. Nitrogen is the costliest ingredient of fertilizers. In the better articles in the markets, farmers are paying from 4 to 8 ets. per lb. for potash, from 5 to 15 ets. per lb. for phosphoric acid, and from 17 to 27 ets. per lb. for nitrogen.

Such crops as wheat, barley, rye, and oats, bring the largest returns for nitrogenous manures. But the results of experiments and of successful farm experience with fertilizers, which, like guano, phosphates and bone, contain less nitrogen, unite in making it a question whether it will pay to apply the full amount of nitrogen found in such crops as wheat, barley, rye, or oats, or even corn.

The case against the nitrogen in the clover fertilizer is still worse. When we consider how often clover thrives with mineral fertilizers alone; how, on a mineral diet, it will gather nitrogen from soil and air and store it for future use; how the great advantage of such crops to the farmer, is that, instead of consuming nitrogen which he must buy at great cost, they gather it for him for nothing; the plan of supplying so much nitrogen to clover seems poor economy. Experiments might be cited, which, like the above, illustrate the principle that the composition of a given crop is far from being a correct measure of the fertilizing materials which will most economically help its growth. At the same time it is fair that

The Other Side of the Question

should be given. And I can do this no better than in the words of Prof. Stockbridge, spoken before the Conn. State Board of Agriculture, Dec., 1876:

"I agree that some plants can gather nitrogen from natural sources, and we need not apply it. All probably gather some, and some classes of plants more than others. I hope that Prof. Atwater, myself, or somebody else, will find the law there by-and-by; when it will be I don't know. I have had sixteen plats on trial this year, looking for that very thing. I have not found it yet; but I shall put the sixteen plats and more too after it next year, and I shall keep on until I think I have found it. There is

no mistake about the fact that clover, beans, and the legumes generally, are great gatherers of nitrogen. It is probable that wheat gathers some. And yet, in our present condition, from our present standpoint, I do not dare to risk it. I do not dare to send out a fertilizer and say that it will do so-and-so, unless I put all the things in. I agree with Prof. Atwater that there is a little loss here. I have put nitrogen for some crops that I know I need not have paid for. There is a little loss of potash, for I have put in potash for some crops that I need not have paid for. That is exactly so. But here is the point. I find it would be utterly impossible for practical farmers, taking them as we find them, going on with their ordinary system of farming, to ascertain the fact whether they need

learned to rate at their true value, has already modified some of his formulas, a fact which accords with their lower price, and I have no doubt he will keep doing so as rapidly as he thinks safe.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.

A House, or a Parsonage, Costing \$3,700.

BY S. B. REED, ARCHITECT, CORONA, NEW YORK.

This plan is intended for a compact and economical residence or a parsonage, containing thirteen rooms, ample halls, eleven closets, large cellar, heater, range, cold and hot water, with all the necessary modern improvements suitable for the uses of a good-sized family.... **Exterior.**—The general outline is nearly square, 26 x 30 feet, which, while the most simple and economical form of construction, affords the best opportunity for a desirable distribution of rooms. The porch, bay-window, and lobby, provide projections that break up and relieve the monotony usually observed in square buildings.... **Interior.**—The interior arrangements partake very much of the character of a "double house," particularly in the upper stories.... **Cellar.**—The cellar extends under the whole house, and contains the heater and bins for coal, etc. The heater ("portable") is arranged to provide warm air to each room in the two principal stories, except the kitchen....

First Story, (fig. 2.)—The entrance, or reception hall, is large, and contains the principal stairway of the house, so arranged that the quarter-circle is about midway of their height, placing the niche down where it adds greatly to the good appearance of the hall. The principal rooms, parlor and dining-room, where it is usual for the family to congregate, are spacious and accessible. Each has a large bay-window, adding to its area, and supplying a pleasant outlook. The dining-room has a large closet for china, etc., occupying the space under the main stairs. The kitchen adjoins the dining-room and the rear entrance, or lobby, and has direct communication with the cellar-stairway through a door. It is provided with a range, boiler, sink, pump, and wash-tubs, complete. The copper boiler is placed above the range in an arched recess in the chimney-breast, and is inclosed with an iron door. The lobby, or rear entrance, is arranged to connect by doors with the dining-room, kitchen, and private stairway leading to the second floor....

Second Story, (fig. 3.)—The stairs "land" nearly in the center of the second story. Very little space is required for the second-story hall, leaving almost this entire floor to be laid off in rooms. These rooms may all be used as chambers, or any one of them may be used as a study. Doubtless the room directly above the front entrance would be best adapted for that purpose. The door leading to this room should have ground-glass upper panels to supply light to the hall of this story.... **Attic, (fig. 4.)**—The attic story is reached by the stairway, shown at the front end of the second-story hall, which has a door at the foot to shut off all communication at pleasure. This story is divided into four rooms, four closets, and hall. The hall is lighted through an opening, or skylight, in the roof, which also serves as a ventilator. The school, or play-room, is put in this part of the house, where noise is less likely to disturb the older members of the household. [To fit this house for country places or villages where there is not a reservoir supply of water, a large Tank should be provided on the 3d floor, to receive water from the roof, with a force-pump to fill it in dry seasons. This might occupy a part of the largest closet at the right of the chimney.—ED.] A work-shop, having ample space for a work-bench, wood-lathe, and other tools, is provided for in our plan on the third floor.... The estimate appended indicates the general character of the work

to be good and substantial. Provision is made for brick foundations, a regular timber frame, double siding, slate and tin roofs, outside blinds, panelled doors, simple and appropriate trimmings throughout, with marble mantles and stucco cornices in the principal rooms of the first story. The figures set down for the cost of windows, bays, porch, lobby,

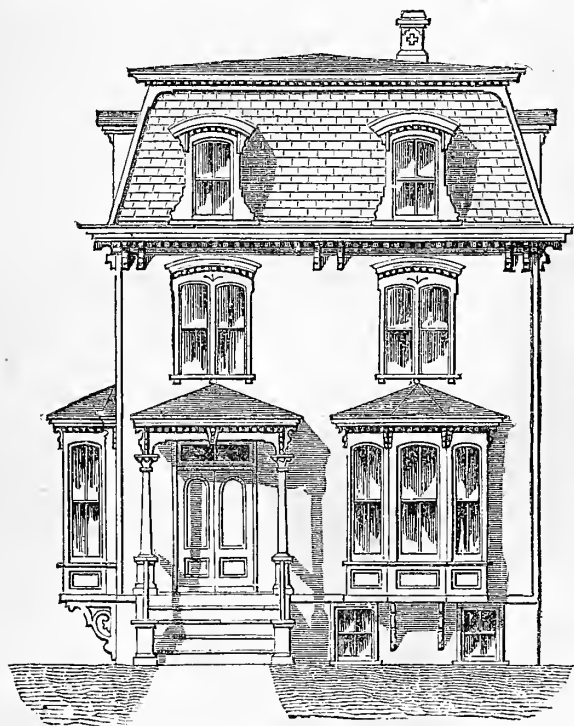


Fig. 1.—THE PARSONAGE.

potash or not. Prof. Atwater will find it out; perhaps I might find it out, but taking farmers generally, I think there would be a failure. I say that I think I know that with nitrogen, potash, and phosphoric acid, mixed in a certain way, farmers will get their crops; I do not know but they would get their crops if I left out a little potash; I do not know but they would if I left out some other thing; but as I say, I do not dare to risk it. Give me time enough, and perhaps I will run these little threads out, and find out how much nitrogen I should leave out of the corn-fertilizer, or out of the wheat fertilizer, or out of the clover fertilizer, but you must give me time. Until I learn that, I say, 'I know nitrogen, potash, and

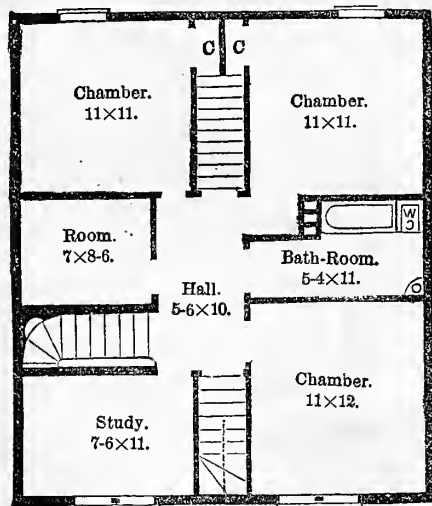


Fig. 2.—PLAN OF SECOND FLOOR.

phosphoric acid will do such-and-such things.' I do not know but I might take out a little. Until I do know, I do not dare to change my formula as a rule of general application."

I understand Prof. Stockbridge, whose position has, I believe, been misinterpreted, and whose labors the farmers of the country have not yet

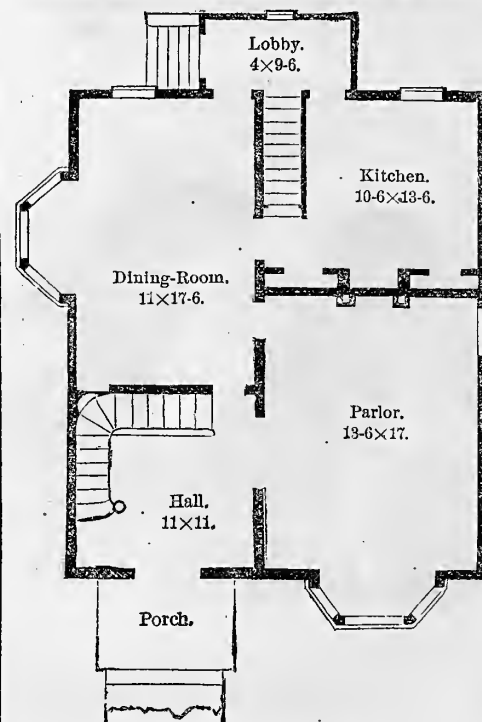


Fig. 3.—PLAN OF FIRST FLOOR.

and doors, include both materials and labor. The \$300 for carpenters' labor is for the balance.

Estimate for house with Mansard roof:

75 yards excavation, at 20c. per yard.....	\$15.00
13,000 brick, furnished and laid, at \$12 per M.....	156.00
48 ft. stone sills, steps, and coping, at 40c. per ft....	19.20
1,000 yards three-coat plastering, at 25c. per yard....	250.00
550 ft. stucco cornices, with centers.....	75.00
4,181 ft. of timber, at \$15 per M.....	62.71
2 sills, 4x8 in. 26 ft. long.....	22.00
2 sills, 4x8 in. 30 ft. long.....	5.00
6 posts, 4x7 in. 23 ft. long.....	120.75
1 girder, 4x8 in. 38 ft. long.....	15.00
4 ties, 4x6 in. 26 ft. long.....	114.30
4 ties, 4x8 in. 30 ft. long.....	67.20
4 hips, 3x7 in. 16 ft. long.....	100.00
100 joists, 3x4 in. 13 ft. at 2c. each.....	
500 wall-strips, 2x4 in. 13 ft. at 11c. each.....	
483 sheathing for sills and roofs, at 25c. each.....	
300 lbs. tarred felt, at 5c. per lb.....	
381 novelty siding, 6-inch, at 30c. each.....	
112 ft. main cornice, at 90c. per ft.....	
10 squares of slate, at 10c. per ft.....	

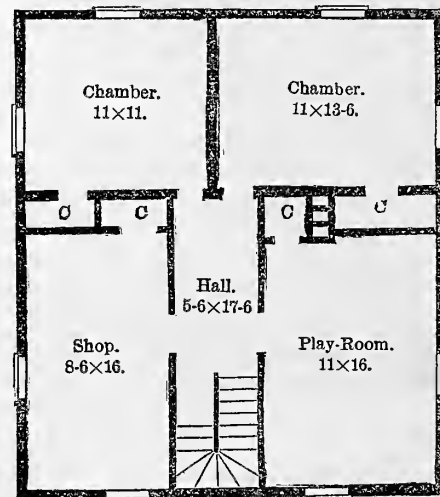


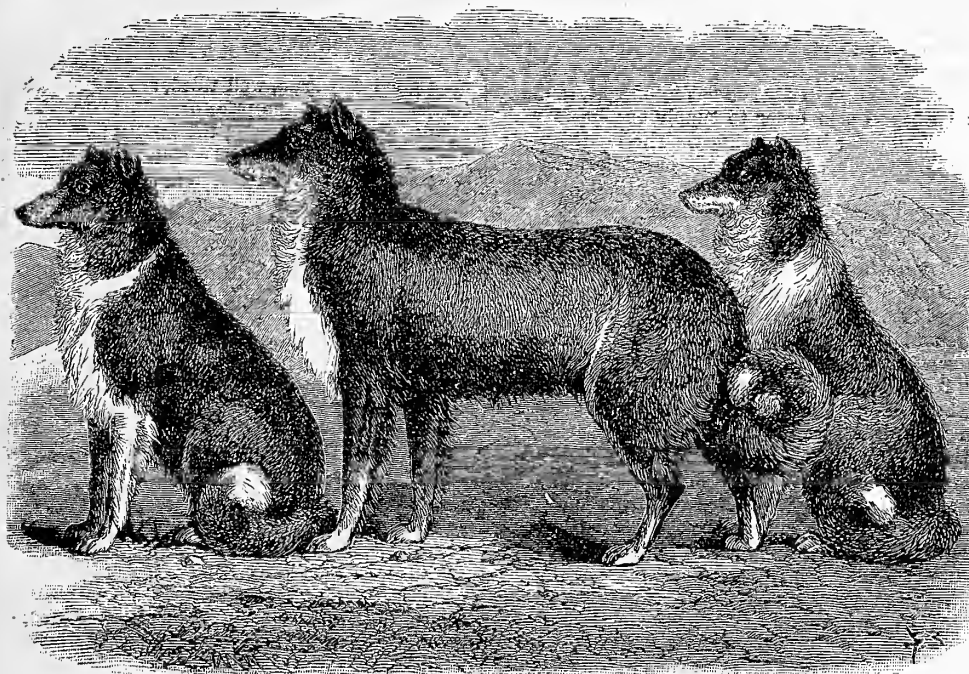
Fig. 4.—PLAN OF ATTIC.

12½ squares of tin, at 10c. per ft.....	125.00
8 cellar windows, complete, at \$8 each.....	64.00
12 plain windows, complete, at \$12 each.....	144.00
8 dormer windows, complete, at \$20 each.....	160.00
2 bay-windows, complete, at \$60 each.....	120.00
1 porch, complete, \$75; 1 lobby, complete, \$50.....	125.00
390 tongued and grooved flooring, comp'l, at 25c. ea.....	109.20
46 doors, complete, at \$10 each.....	460.00
11 close s, complete, at \$6 each.....	66.00
2 marble mantels, complete, at \$25 each.....	50.00
1 heater, complete.....	200.00
Gas-pipes, \$33.71; Plumbing, \$188.98; Carting, \$75.....	299.64
Plumbing, including range, etc.....	300.00
Extras, for hardware, etc.....	75.00
Carpenters' labor, not included above.....	300.00
Total amount.....	\$3,700.00

Shepherd Dogs.

The Scotch Colley dogs are remarkable for great intelligence; an instinct which seems sometimes to surpass reason; wonderful endurance, and activity. Without these dogs, sheep-keeping in many districts, useful for no other branch of agriculture,

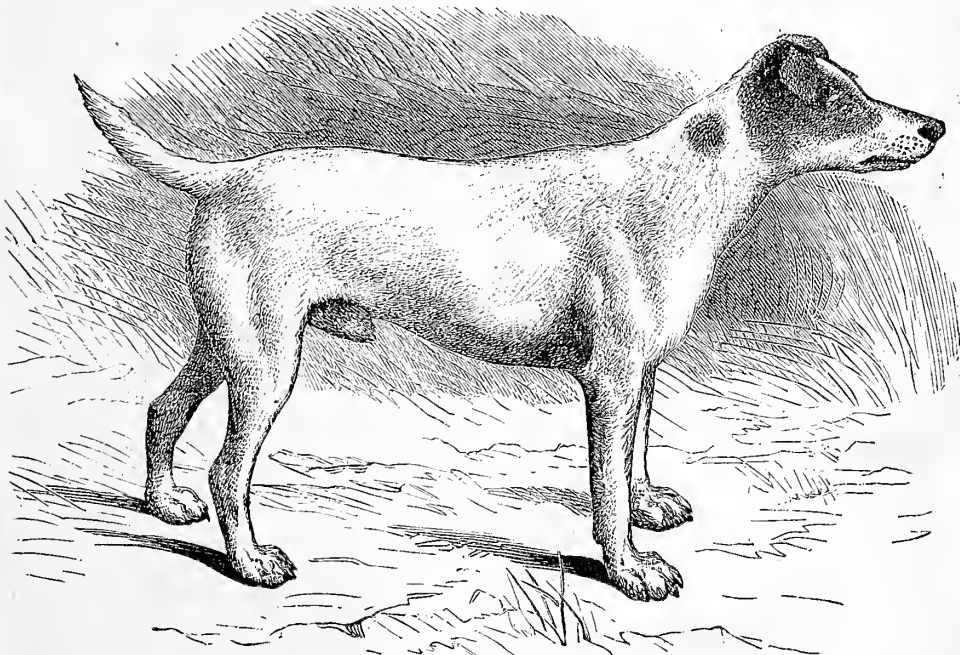
trained to manage with gentleness any kind of live-stock. He is domestic in his habits. While kind and affectionate to his owner, and his herds, he is watchful and suspicious of strangers and strange animals. His good disposition gives him great influence over his charge, and causes them to have confidence in him. When a flock is afraid of the shepherd's dog, it shows wrong management



SCOTCH COLLEY DOGS.

would be impossible. The home of this breed is the Scotch highlands, a locality of rocks and hills, interspersed with grassy valleys; elevated table lands bearing scanty herbage, and "moors," or level or slightly undulating tracts covered with gorse, heather, low bushes, boggy places, and scattered rocks. Upon these hills sheep are kept in large flocks, exposed from day to day to all the vicissitudes of storms, mists, rains, and snows, with no other shelter than is afforded by the lee-side of abrupt precipices, overhanging rocks, stone walls, or in rough sheds of poles and heather. Without his dogs the shepherd would be helpless to manage his flock in this rough country. In countries where arable land bears a very high price, only such land as can not be plowed is given up to sheep pastures; and here the dog is invaluable: and not only here, for he is made useful upon the more civilized hill-sides of the Scotch low-lands; upon the grassy downs of England, the rich farms where sheep-keeping is only incident to high culture; and upon our own Western plains. Everywhere, where sheep are kept, a sheep dog of some kind is found useful; and of all the different varieties the Scotch Colley is considered the most valuable. He possesses a rare instinct for his work, which comes as a second nature to him. He often knows the ways of sheep better than his master, and understands the signals of the shepherd when far out of hearing, with great precision. Cases have been known in which the dog has discovered the absence of some laggards of the flock which his master had not missed, and has returned to the pasture for them unbidden. He can range his flock upon one side of a road, when meeting other sheep, and thus keep them from intermingling with the strangers. He will discover by his acute sense of smell sheep that have been overwhelmed in snow-drifts, and will conduct the shepherd to the place. If no help is available, he has been known to dig into the drift and release imprisoned sheep, and to warm chilled lambs by huddling close to them. He is valiant in their defence, and will give battle to a wolf without hesitation. No vagrant dog will be permitted to approach a flock of which he has charge. He will bring back stragglers when upon the march, and will return to find the sore-footed ones that have lingered by the way. For a farm dog he is of special value, as he can easily be

on the part of the shepherd, and that the dog has been badly trained. The Scotch Colley has long and woolly hair; a bright mild eye; a sharp nose; an intelligent aspect; a long bushy tail, curling upwards, with the end clear of the ground; and in color is usually black and tan, variegated with a little white. The illustration pictures three dogs of this breed, owned by Francis Morris, of Philadelphia. Not the least wonderful or useful characteristic of the dog is his tenacious memory, by which he is able to remember all the turning points in a journey of hundreds of miles, and to recognize at



THE FOX-TERRIER.

sight every member of the flock to which he has become attached. With all his good qualifications, however, he sometimes lapses from virtue; and no other dog is so destructive in the fold as a sheep dog become demoralized by bad companions. A traitor is the worst of enemies.

A Useful Farm Dog.

The fox-terrier is a great favorite in Great Britain, and is getting quite well known in this country as a useful dog on the farm. For unearthing foxes he is as able as a ferret after rabbits; and in killing all sorts of vermin—rabbits, woodchucks, skunks, rats, mice, squirrels, etc.—he has few equals; and next to a shepherd dog, there is none the farmer stands more in need of than one to destroy the vermin which prey upon his crops, trees and shrubbery. The fox-terrier is plucky, and brave as dog can be, facing danger and death like a true soldier. He is small, neat, and comely easy to handle, and quick to obey. The "Tartar" strain, it is said, should be avoided, as being an objectionable mixture with bull-terrier blood. A writer in an English paper, the "Country," thus describes what he claims to be the true type of the fox-terrier: "Head level, and well filled up under the eyes; long and powerful jaw, with just a suspicion of fleg, rather square, decidedly not a fast taper; ears small and drooping close—this is a *sine qua non*; eyes small and expressive; deep and rather narrow chest; shoulders well set back, with elbows working as straight to side as the cocks on a double barrel; legs as straight as arrows; feet round, toes slightly arched, and not the least splayed; short body, well ribbed up; can not have too much bone or muscle; must be as cobby as possible, and should be very near a breeder's definition of what a Shorthorn should be—a brick with the corners knocked off. He should not be more than seventeen pound weight, which is imperative; and his heart should be in the right place. He should stand low, and his coat, though close, should be dense and hard. The fox-terrier, as I have found him, is pre-eminently an intelligent dog, 'at all times to our will conformable, ever in fear to kindle our dislike.'"

Rich Soil for Roots.—A fair shaped mangel or turnip cannot be grown upon poor soil, even though freshly manured. To grow a well-shaped, dense root, without lateral fibres of great thickness, spreading like the outstretched fingers of a hand, the plant-food must be equally and thoroughly mixed with the soil, so that each fibre can reach it without travelling far. Then the nutriment is

brought from all quarters to the bulb, and its growth is regular, the fine root fibres being numerous, evenly distributed, while the tap-root descends straight downward. This condition of the soil cannot be procured by the application of fresh manure, but may be by the previous application of

that which is fine, and well decomposed. However, by plentiful fertilizing with the prepared artificial manures, and by thoroughly mixing these with the soil by harrowing, a very fair crop of good roots may be grown even upon comparatively poor land. The fine condition and ready solubility of the fertilizers have an immediate effect upon the soil, and enable the plants to procure the nourishment most readily assimilated as fast as the crop requires it.

Among the Farmers.—No. 31.

BY ONE OF THEM.

Old Wethersfield

Was represented by one of the three grape-vines on the seal and coat of arms of Connecticut, encircling which, the motto "*Qui Transtulit Sustinet*," indicates the abiding faith which gave strength to the pilgrim band who settled Hartford, Windsor, and Wethersfield, planting a "Vineyard of the Lord" in the heart of the wilderness, amid privations and trials, and dangers which can not now be paralleled. The placid Connecticut then as now brought fertility to the meadows in the spring freshets; shad and salmon to the very doors of the settlers, together with the means of communicating with the outside world much more conveniently than by hewing their own way through a primeval forest 100 miles with their ox-teams and axes. Wethersfield was always a quiet restful place to me. I associate it with after-supper drives (we say after dinner now-a-days), when the great elms cast no shadows on the street or roads, and when onion-weeding was over for the day, and the girls had unbent their calloused knees, and were tripping about, enjoying the cool of the evening after their day's work in the field. The slender-spined church—"built by the women out of onions," the legend runs—is unchanged. The broad street, still elm embowered, changed but little, and not a few of the old houses are still unaltered; but change is rife even in Wethersfield. Steam-cars and whistles break the silence; horse railway cars rumble at certain hours. Even the seed-business, which for years has spread a sort of beneficent mantle over all the land, near the village, giving in a very quiet way employment to many hands—even this business now obtrudes itself upon the stranger's attention as the great seed warehouse of Wm. Megget, with its lettered roof, looms up the most conspicuous building in the village. One is forced to think of the great yellow and *fruity* labels of the "Wethersfield Seed Gardens," which one meets with in every country store almost from Maine to Georgia, or even, very likely, to far-away Oregon.

Onion Seed.

They raise onions still in Wethersfield, but they export no more—the Connecticut River sloops leave no longer their odorous wakes as they plow the placid Sound. The redolent esculent is raised strictly for home consumption, and for seed, and last year I believe they had actually to import bulbs, as the home supply was insufficient for planting. Immense quantities of seed are raised, and the crop is a beautiful one in all stages—early in the ground, soon giving the peculiar tender bluish green to the fields, requiring clean culture, and changing in appearance greatly as the season advances, and the flower stems push up, and head and blossom. It is off the ground in time for other use of the land, and the seed, when harvested, dried, cleaned, and ready for market, is worth, in different years, from 15 cts. to \$1 a pound. So it pays well some years, and sometimes the seed-growers net a loss.—My visit was particularly to the

Farm of S. M. & D. Wells,

who are among the best farmers in the State, are widely and favorably known as Ayrshire breeders, and raise seeds by contract or for the general market. They were large milk producers and sellers a few years ago, but now look for their profits more in the breeding of fine Ayrshire cattle than in the milk business, which was a good deal damaged by the skim-milk dealers, though to the consumers' advantage. There have been a number of "creameries" or

butter factories started within a few miles of Hartford—two at least—the one at Farmington being the most famous. They sell their skimmed-milk, which during most of the year is quite sweet, to dealers who peddle it from house to house at 3 cts. a quart. The people found that this sweet skimmed-milk was quite as good as the watered milk of most milkmen, and thus the price of milk fell off greatly, and the demand for pure Ayrshire milk, at a fair price, fell off too, so that it was no longer an excitement and a pleasure to produce and market the article. In fact, men ought to be well paid for turning night into day and day into night, as milkmen have to, in order to supply customers with fresh milk for their breakfast. The Wellses work with their men, and I think were really glad of the opportunity to give up this most laborious, though frequently very profitable, branch of farming.

Their Ayrshire Herd

has long been famous throughout the country. They have been judicious and liberal buyers, and good breeders, their stock giving excellent satisfaction wherever it is distributed. I meet not unfrequently animals in high repute tracing to the "Dolleys," "Floras," and "Mysies" of their herd. They have always been good feeders, and as they have been proprietors of a valuable milk route in Hartford, it has been an object to produce the largest quantity of good milk consistent with health. I say *good* milk, for having this reputation they have usually been able to obtain a higher price for their milk than any one else, and such a reputation is worth maintaining. Some years ago, when making experiments with feed, as to the policy of steaming, etc., the yield of the herd was 9½ quarts in winter, and 11½ in summer, to each cow, counting dry cows and all. This makes the general average nearly 3,800 quarts of milk per cow, which is extraordinary. I think I have never visited a stable where the two objects of keeping cows, namely, making both milk and manure, were more thoroughly well done. The cows always have water before them in the stable, and are fed all they will eat, and though kept at the business of calf and milk producing so steadily, they live to old age, and are always in good condition, but not fat. Stimulants are never employed; but pure air, exercise, variety of food, cleanliness, and regularity, are, in my opinion, the reasons for their success.

Home-made Things.

Observing the plain and substantial character of a particular set of double-harness, I learned that it had been made upon the place; a thorough journeyman having been employed, the very best leather bought for him by the side, and a capital job turned out. The harness cost a little more than one apparently as good could have been bought for, and it will outlast two or three "boughten" sets. Not only is the leather of the very best, but the thread is of the first quality, and the sewing thorough. Spots where wear comes, or which are required to be particularly strong, are reinforced by inserting capping, or backing with extra pieces.

An Old Farm-Wagon

was also pointed out, as showing the value of home-made things—home-made in the right way—that is, by a first-rate mechanic working under the direction of the man who is going both to use and pay for the article. It is not necessary that this sort of work should be done upon the place. A neighboring wheelwright will do better work in his own shop than on the farm, but if a man of a little experience and common sense cuts his own timber, seasons it, tests it, selects with the mechanic what is best for spokes, felloes, boulders, reach, etc., he is certain that no dozy or wormy pieces get in, and that with good workmanship, he will have a set of running gear that will stand some "racket," as they say in New England. As to this wagon, it was made some 35 years ago by the father of the Messrs. Wells, and has been in constant use ever since. Not a spoke has failed or loosened; tires, felloes, and the bottom and side-boards of the box, have been worn-out time after time, but the entire running part not exposed to wear with the box-frame, has lasted intact, and is now apparently as

good as ever. I do not doubt many a parallel may be easily found, but our ways of doing things are not changing for the better. We are using the cheap, but gaily painted wagons, spongy, stretchy harness, tricked off with brass, like a brewer's rig, and other showy articles, altogether too much. These things are cheap, and in an emergency are worth the money asked for them, twice over, perhaps, but for steady hard work, and every-day use, are dear at any price.

Onions and Tobacco

on a good clay-loam, well tilled, are very satisfactory crops, even if the price does fluctuate. They require plenty of manure; the soil holds it. They need clean culture, and the soil once free from weeds stays so unless the seed is sown again. Excellent tobacco can be raised with manure enough of the right kind, on the light lands across the river, but the manure does not last in the soil, and being all derived from fields not subjected to the same clean culture required by the tobacco, the entire farm is not benefited as where rotation can be followed, and one field after another be thus enriched and tilled. Potatoes are a prominent crop, and succeed well, and great use is made of

Corn for Fodder.

The variety is Stowell's Evergreen (sweet), sowed in drills 3 feet apart, manured both broadcast and in the drills. A little is put in very early, and fed green from the time it is fit to cut, to frost, and great quantities cured for winter use. The corn is cut up with corn knives, and set up in armfuls, in good sized stooks, securely bound, and well spread out at the butts. Thus it is left until needed, or until it can be hauled in over frozen ground, when it opens out as green, flavorful, and fragrant as well-cured hay. Large crops of mangels and other roots are raised, and a system of cooking the feed of the cattle has been followed for many years. Everything is cut up by horse-power, and mixed in a steaming-box, which is of plank, with a false bottom. The box extends from the cattle-floor into the main floor above, where the fodder is cut, and is large enough to contain two or three days' feed for the whole stock of some 40 milking and breeding cows, and I don't know how many young stock.

Talks on Farm Crops.—No. 18.

By the Author of "*Walks and Talks on the Farm*," "*Harris on the Pig*," etc.

"I have a piece of timber bottom," writes Mr. Cobb, of Kansas, "that I have recently cleared up, and have had it in corn for the last four years. Corn is not very profitable at 20 cts. a bushel."

"I am glad to hear him acknowledge that," said the Deacon. "I have long suspected that the men who figure out such handsome profits on paper from 20-cent corn, are railroad men who have land to sell and freights to carry."

"Hush, Deacon," said I, "there is as much money to be made in raising corn at 20 cents a bushel in many parts of the West, as there is in raising it here at 40 cents a bushel."

"Just about," said the Deacon, sarcastically.

"Well," said the Doctor, "it is no use grumbling at prices. They are beyond our control. All you can do is to raise good crops, and market them to the best advantage. You are not obliged to sell corn at 40 cents a bushel. I paid \$1.50 for a hind-quarter of lamb the other day, and I am sure that farmers could well afford to feed out more corn to their sheep and lambs."

"That is certainly true," said I, "especially if you have the right kind of sheep. As yet, we fail to appreciate the influence which the exportation of meat to England is going to have on our agriculture. We shall feed higher. Our fattening lambs and sheep will have grain every day, summer and winter. It would be a good thing for all concerned, if we could send a million fat sheep to England next year, and two millions the year following. There is nothing in the way, except that we have not got the *fat* sheep. And yet we sell corn for 20 cents a bushel in the West, and 40 here."

"Yes," said the Doctor, "and it is almost impossible, here in the country, to get a good beef-steak. I have to pay 15 cents a pound for the wretchedest kind of beef. Why we do not get Shorthorn bulls and raise better cattle, and feed more corn, is one of the mysteries of human nature."

"Hitherto, Doctor," said I, "we have had no steady market for beef and mutton. Now that this is secured, we shall raise better cattle and sheep, and shall feed higher. But we are wandering."

"This piece of land," continues Mr. Cobb, 'is in fine condition and rich, and will continue to produce a good crop of corn for the next forty years without manure. It ought to produce 30 to 40 bushels of wheat per acre, if I had some good variety. What kind of wheat would be suitable to such a piece of land in Southern Kansas, that has a stiff stem, and not inclined to run to straw?'

The Squire, the Deacon, Charley, and the Doctor, all said the "Clawson."

"But, nevertheless," said I, "it may not be the wheat that Mr. Cobb wants. The fact that it does well here and in Michigan does not prove that it will do well in Southern Kansas. It has stiff straw, and stands up well, but it is such a vigorous grower, that on rich bottom-land and in a southern climate it may run too much to straw. Still, I know of no variety of white wheat that I would sooner risk on such land than the Clawson. I am never very enthusiastic over new varieties of anything. We are inclined to think more of what variety of wheat to sow than about preparation of the soil."

"You should attend to both," said the Doctor, "Make the land in good condition, and then select the variety best suited to your soil and climate."

"That is it, exactly," said I, "but some farmers seem to think they can find a variety that will do well on poor, wet, weedy, half-worked land. Mr. Cobb has the right idea; he has rich land in fine condition, and is wise in looking for the best variety. But I have known a farmer send hundreds of miles for a choice variety of wheat that was advertised in the papers, and sow it on land that was too poor, and wet, and weedy, to grow a crop of rye. We need better varieties of wheat and barley, oats and corn, potatoes and root-crops; but we need still more better cultivation, better manuring, and more prompt and energetic preparation of the land."

"That is all true," said the Doctor, "but farmers are improving their land more rapidly than ever before. Artificial manures are having a decidedly beneficial effect. They put new life into the land; and, better still, new thoughts and new hopes into the farmers and farmers' boys. It is giving tone to our agriculture."

"Perhaps so," said the Deacon, "but what we want is better prices for our produce. It is no use raising crops if we cannot sell them."

"Our crops," said I, "always have sold, and always will sell. Go where you may, you will see the familiar sign, 'Cash for Wheat.' True, the price may not suit us. But those who have wheat to sell are as well off as their brethren who have flour to buy for themselves and their children. Let us be thankful that our crops are as good as they are."

"Would you put in much wheat this fall?" asked Charley. "Probably wheat will be very low."

"I should put in just as much wheat," said the Doctor, "as I could put in well—and no more. We had a great crop of wheat in this section last year, and the wheat now (June 25) on the ground is decidedly better than the average."

"Yes," said the Deacon, "and there was much more land sown to wheat last fall than for many years. It is a rare occurrence to have two such crops of wheat in succession. I think farmers will sow all the wheat they can this fall."

"But," said I, "as they made a very great effort to put in all the wheat they could last year—sowing every acre that could be got ready—I doubt very much whether they will have as much land as usual this fall to sow to wheat. At least three-fourths of all the fall wheat raised in this section is grown after barley and oats. Far less land was sown to barley and oats this spring than usual. Then, again, clover-seed was very cheap, and our wheat is seeded down with clover. It is an unusually good catch. And farmers will not be likely to sow

wheat after wheat, as they are sometimes tempted to do when the clover fails."

"All of which goes to show," said the Doctor, "that the farmers have far less land ready to sow to wheat this fall than was sown last year."

"I should say, with the Doctor, if you have any land that will bring good wheat, do not hesitate to sow it. I have 33 acres in wheat this year, and 30 in barley. As soon as the barley is harvested we shall plow the land and get ready for winter wheat."

"Don't plow it but once," said the Deacon.

"That depends on the land," said I, "and to some extent on the weather. On sandy land, and especially if it is covered with a good crop of weeds, probably you are right. I would plow it once with a jointer plow, and depend on the harrows and cultivators, or gang-plows, to keep down the weeds."

"Would it not be a better plan," asked Charley, "to harrow the stubble with a heavy three-horse harrow? This would start the weed-seeds, and the scattered barley or oats. We did so one year, and I stood on a plank laid across the harrows to drive. I had to get off occasionally to clear the harrows of the stubble and weeds, but it did good in starting the weeds and scattered grain."

"That is so," said I, "and if the new Peruvian Government Agency will sell us nitrate of soda at such prices as we can afford to pay, I should like to dress all my wheat land this fall with 200 lbs. of mineral superphosphate and 150 lbs. of nitrate of soda, per acre; with another 100 lbs. of nitrate of soda sown as a top-dressing in spring, I should expect great wheat. On rich, strong, loamy soils, artificial manures are not so necessary; but it will cost more to get the land ready for the wheat. But I think it is probable that we shall have good wheat on these clay-spots, and good clover afterwards. And so, while it is considerable trouble to get such land into a thoroughly mellow condition, it pays wonderfully well to do it—especially as the land is there and will have to be sown whether we will or no. You want a three-horse plow with a *good point*. And as soon as the land is plowed, *roll it*. If the roller does not break or press down all the clods, harrow, and roll again. Do not leave a clod bigger than a hen's egg on the surface. Harrow and roll until the surface is smooth. This will check evaporation, and the clods that are pressed into the loose, mellow earth will absorb moisture, and become so soft that the cultivator or harrow will make some impression on them. But I would not depend on this alone. Before sowing the wheat I would plow again. If the first plowing was well done, and if the roller and harrows have been used sufficiently, this will turn under four or five inches of moist, mellow soil."

"That is what I object to," said the Deacon. "Why not keep it on top?"

"The plow," said I, "will turn under this mellow soil, and bring up two or three inches of hard, cloddy soil. Roll and harrow, and drill in the wheat deep enough for the seed to reach the moist earth underneath. The drill will pull up some of the clods and leave the surface rough—but this is no objection. I would rather have the clods on top and the mellow soil beneath, rather than the clods underneath and the mellow soil on top. But I am aware that there are two sides to this question. The Deacon and I have a standing quarrel on the point. A good deal depends on circumstances."

The Use of a Roller.—The proper office of the roller is to reduce a cloddy soil to a fine condition, and not to produce a smooth level surface. Rolling may smooth the surface, but it can not make it any more level than it was previously, except to get rid of the small furrows left by the harrow or the drill, which are of service, and should not be obliterated. Rolling is useful when the soil is full of clods, which prevent the proper covering of the seed and the even sprouting of the grain. It is injurious when it compacts the surface and causes it to bake and crust over, by which the soil dries rapidly and receives moisture slowly, or not at all. Then the dew is not absorbed, the atmosphere can not enter to carry moisture into the ground; rains run off from the surface, washing it

and carrying off fertilizers or grass-seed, either altogether or into bunches, by which the plants are caused to come up unevenly. A good use of the roller is upon meadows in spring to smooth the surface for the mower, but at the present season, when fields are about to be prepared for fall grain, farmers may well consider how the roller may be used and misused.

Grades as Milkers.

BY PROF. LEVI STOCKBRIDGE.

A recent writer suggests two very important questions, the facts in relation to which, and the principles controlling the ease, should be well understood by all dairymen and breeders of dairy stock. His query is, Do heifers, from native or scrub mothers by bulls of thoroughbred milking stock, make better milkers than their dams; and if so, why? Why take the qualities of the stock from the sire, rather than the dam? It is an indisputable fact that many native cows are superior milkers and butter-makers, and this quality is transmitted to their daughters in some cases, until a family exists of local celebrity. This characteristic, however, has generally been lost in the course of three or four generations, for want of care in keeping up the regular line, or by the yearly infusion of blood of base or unknown quality. It is quite possible that remarkable milking qualities in an individual native cow might be perpetuated to remote descendants, and even increased, by careful selection of the sire, and in-and-in breeding. But that is the method by which thoroughbreds are produced, and requires skill and intelligence of a high order, and years of observation and labor. With a good native cow as the basis or stock, much anxiety and time may be saved, by an immediate infusion of the fixed blood of a thoroughbred of the desired type, and the result will always answer the first query in the affirmative. The calf will be better than its dam, in some respects, and worse in none. As an accident or sport, it is possible the dam might be a better milker than the dam or breed of the sire, and the calf taking the type of the sire be inferior to her, but the rule taught by experience is the other way. In this case the characteristics of the offspring are determined by the long-known law, that the longer a class of animals is developed in a single line, the greater is their transmitting power, with the more certainty do they impress their qualities on offspring. The blood of the dam having no line of descent, and no accumulated force, is overborne by the thoroughbred sire. Theoretically the progeny of such a connection is more than half-thoroughbred, and should develop more than half of the sire's stock qualities in milk and form. There is but little danger of reversion to original form if this method of breeding be adhered to; but even if there were, it is undoubtedly the cheapest, quickest, and surest way to develop fixed milking qualities from native cows.

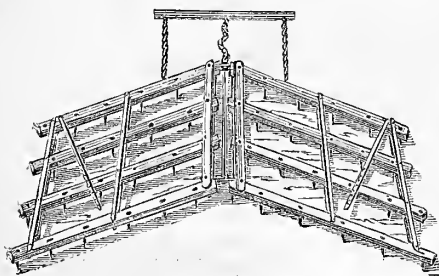
[Upon a great majority of the old farms of New England, and the Middle States, cows have been used for milk, and neglecting almost every other quality, bred for milk for many generations. They are well-bred in no other particular, but not a few of them are in this. When such cows are crossed with a bull of any of the established breeds, is it surprising that even a grade Hereford proves a grand milker? That Shorthorn grades, even by sires of families bred rather for beef than for milk, should prove great milkers would be looked for from the fame of their dams and from their own superior form and higher grade as animals. That Ayrshire grades from such a cross should give much milk, and Jersey grades rich milk, we look for as a matter of course.—Ed.]

Weeds.—The worst thing about weeds, is, that the farm of the good cultivator is often stocked with them from the highways and the fence rows or farms of his neighbors. The law in most places provides a remedy and enforces a penalty upon careless or neglectful farmers; but the good farmer is generally a good neighbor, and is greatly disin-

inclined to protect himself by law, and so he suffers without complaint. But there is an unwritten law which exists amongst men, which should impel every one to use his own property so that it may not be made a source of injury to that of others. Every farmer should be made aware of the damage that arises from weeds, the waste of labor that is caused in eradicating them, and the robbery of the soil by their support. If every farmer fully appreciated this, there would soon be a crusade against the whole army of weeds.

A Harrow for All Work.

S. H., Griggsville, Illinois, sends a description of a good harrow. It is made in two parts or wings, each of which consists of four bars connected with



A HANDY HARROW.

three cross-ties, the two outer ones having strips of light bar-iron beneath them and under the bars; and as the bolts pass through these, it gives great strength to the implement, notwithstanding its lightness. Upon each wing there is an adjusting bar, furnished with a number of holes, which operates as a brace to spread the harrow as desired. The teeth may be made to stand upright or to slope backwards, as the builder wishes. By using the sloping teeth, the harrow may be used to clean wheat fields in the spring, or to harrow young corn or potatoes, as is frequently done. A light harrow of this kind, furnished with both upright and sloping teeth, may be made to do varied work, and will be found a very desirable implement.

Slatted Floors for Cow-Stables.

The greatest difficulty experienced in the management of a dairy is to provide an effective method of

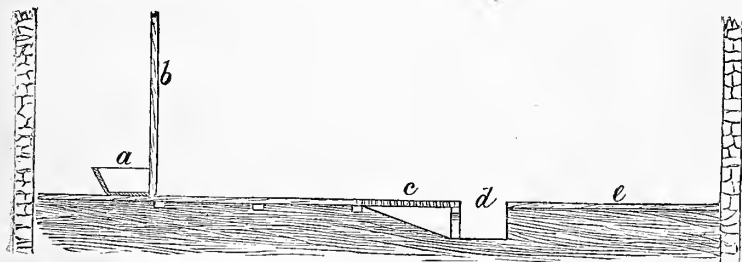


Fig. 1.—SECTION OF GRATED FLOORS.

keeping the cows clean. Stalls provided with stanchions, and gutters in the rear to catch the droppings, is probably the best method at present used in dairies; but an improvement upon this may easily be made by using slatted or grated floors. These have long been used in English stables, and have been introduced in this country by at least one enterprising farmer. Mr. E. W. Stewart, of Buffalo, N. Y., has provided his stables with a floor of this kind, and has found it very effective in keeping his cows cleanly, and in saving labor. His method is very similar to that in use by the well known English farmer, Mr. Mechi, who speaks very highly of the system, and considers the cost to be abundantly repaid in the lessened labor and improved condition of the cows. The cost for this improvement, complete in every respect, need not be over \$6 per cow, or but \$120 for 20 cows. The arrangement of the floor of the stable may be as shown at figure 1. The feed passage is at a; the stanchions at b; the grated floor at c; the manure gutter at d; and the drive-way for a wagon or cart to remove the manure at e. The grating is shown

at figure 2, and is made of iron bars 1 1/2-inch wide and three-eighths of an inch thick. The cross-bars are placed with the edges up and down, about one inch or one inch and a half apart, and are riveted to the end bars. The gratings are 12 to 18 inches

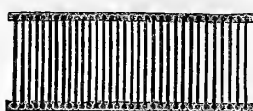


Fig. 2.—THE GRATING.

wide, and may be made of such lengths as will answer for one or more cows. They will answer either for stalls or an open floor with stanchions. Rings or eyes are riveted on to the front bars by which the gratings may be hinged by staples to the timber in the solid floor. The front part of the floor is made of plank or concrete, or may be of earth; but there must be a timber bedded in the floor in either of the last cases, to which the gratings are hinged, so that they can be lifted up for the purpose of cleaning out the gutters when necessary. The form of the gratings is shown at figure 2. The rear portion rests upon wooden posts, stone blocks, or angle-iron pillars, as shown at figure 3. The latter is, perhaps, the best arrangement, although square stone blocks bedded in the cement of the gutter are durable and cheap. If the iron posts are used, they should be set in a beam of wood, bedded in the cement. The floor beneath the gratings may be sloped (fig. 1) down to the open gutter; which will tend to bring the manure down to the opening, and facilitate the cleaning out. The plan of the floor is shown at figure 4; the reference letters being the same as in figure 1. This floor will be found very cleanly; the droppings which fall upon the gratings pass through them into the gutter; any which



Fig. 3.—CROSS-SECTION OF GRATED FLOOR.

may remain upon the bars is forced through by being trampled upon, and the cows' feet are cleaned by the action of the bars. No bedding is necessary upon this floor, and this expense is saved. This is an important item in towns and cities, where litter is very costly; and is, at least, worth considering where straw is plentiful, because the straw may be wholly used for fodder. Some dry earth, or swamp-muck, should be thrown into the gutter to absorb the liquid, and a daily dusting of finely-ground gypsum will prevent any odor from the stable. If the liquid manure is to be preserved separately, the gutter may be made to discharge into a cistern, and if the gutters and floors are washed down with water every day or two, a large supply of liquid manure could be secured. One of the Blunt Universal pumps, which is both a suction and force pump, attached to a cistern and furnished with a hose and nozzle, will be found very convenient for this purpose. The passage behind the gutter—when the room can be spared—should

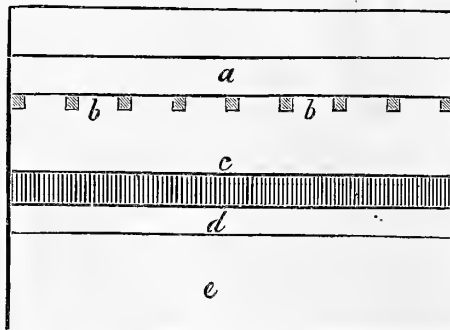
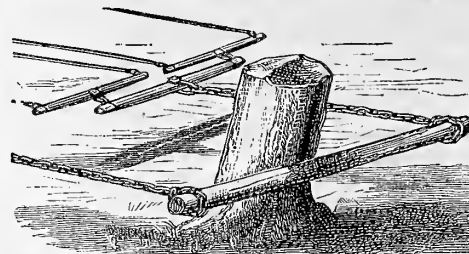


Fig. 4.—PLAN OF SLATTED FLOOR.

be wide enough to permit a wagon or cart to be driven through for the removal of the manure; in which event, there should be doors made for the purpose.

A Method of Pulling Stumps.

A correspondent sends us a sketch of his method of pulling stumps or rocks, which may also be made useful in loading heavy logs, roots, or stones. The apparatus consists of a long stout pole, which serves as a lever; to one end of it is attached a chain con-

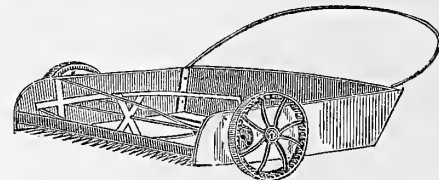


A CHEAP STUMP PULLER.

necting with the stump to be moved; to the other end the draft chain is made fast, a tree or stump being made use of as a fulcrum.

Gathering Clover Seed.

It is seldom that clover straw can be made useful after the seed has been hulled, so that it is a saving of labor, to cut it as high as possible, taking only the heads. By using the scythe, or cradle, this cannot be done; and it will be found much better to use a mowing machine, having a table attached to the cutter bar, or a clover-seed gatherer made expressly for this work. The former method is a convenient one, but it is only a makeshift after all. It consists in attaching to the cutter bar, a light frame of hickory slats, made somewhat like a set of cradle teeth, so that it will slide easily over the ground. A stout cloth is spread tightly over the frame, upon which the clover heads may be gathered as they are cut. A machine, of which the cutter bar can be raised several inches, if necessary, is preferable for this work. Then the clover heads only need be cut. As they are cut, they are raked back on to the cloth, until it is full, when the load is drawn off, and left in a heap to dry. The rake should be a sort of scraper, as teeth are unnecessary. A broad lath as long as the cutter bar attached



CLOVER-SEED GATHERER.

to the rod, is the best tool. A machine for gathering clover-seed is shown in the accompanying illustration. It is automatic, and does its own clearing of the teeth, by means of a revolving scraper, which is operated by the carrying wheels. The machine is guided by the curved bar behind, and drawn by one horse. The management of the clover seed crop is very simple. It is improved by frequent wetting and drying, as then the seed is more easily hulled, than when it is cured in dry weather. If the weather should be dry, it is best to rake the straw, or the heads, into small heaps, letting them heat moderately; afterwards spreading the heaps in the sun to dry. The raking may be done while still wet with dew, which will assist the fermentation, and heating, which partly rots the hulls, and helps the cleaning. The crop, when perfectly dry, after two or three weeks' exposure to the weather, should be stored in a corner of the barn.

The Pea-Fowl.

Although the pea-fowl is well known as a bird of fine feathers, few persons are acquainted with its natural history and real merits. It is a good table fowl, and as easily reared as the turkey, still it is rarely seen upon the farm or country place, and then only as an ornament. This bird is a native of

Asia, from whence have come nearly all our gallinaceous fowls, the turkey excepted. In the time of Solomon, it was an article of merchandise, and was brought with ivory and apes from Tarshish to Judea. One species of Pea-fowl was found by an English traveller, Colonel Sykes, abounding in a part of India, where large flocks were kept about the native temples. Another Eastern traveller relates that from 1,200 to 1,500 were seen by him in passes of the mountain, within sight at one time; and he speaks in extravagant terms of the brilliance of their plumage. There are three distinct genera, which include several species and varieties, such as: the Crested, the Black-shouldered, the Javan, the Japan, the Iris, the Thibet, the Malay, etc. All the domesticated sorts are surpassed by the wild ones in beauty. Cuvier says of the Pea-fowl: "We find in its incomparable robe, united, all the brilliant colors which we admire separately in other birds; we find all that glistens in the rainbow, that sparkles in the mine, the azure and golden tints of

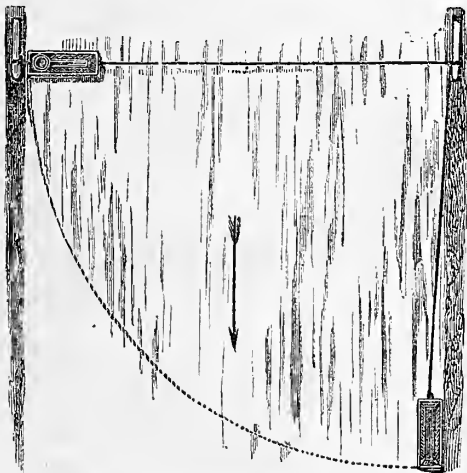


Fig. 2.—FERRY AT HIGH WATER.

the heavens, and the emerald of the field." White, the naturalist, found that the feathers of the train do not belong to the tail, but that they grow upon the back, the real tail feathers being short, stiff, and brown, about six inches long, and serve as a prop to support the immense train. By a peculiar muscular action, the long train feathers can be erected and spread, and their shafts made to strike together, and produce a clattering noise. The Pied peacock is white upon the wings, belly, and breast; the rest of the plumage is as showy as in the other species. Pure white birds are very rare, and highly valued, but from the absence of the gorgeous coloring of the common kinds, they suffer greatly in contrast with the latter. It is not until the second year that the difference between the sexes becomes apparent. This bird lives from 20 to 25 years, and reaches maturity slowly. The third year the train of the cock becomes developed, and it is only when it exhibits its full coloring that he is ready to be mated with three or four hens.

The pea-hen lays her eggs on alternate days, and when she has produced five or six, she will incubate, unless the eggs have been removed. She makes her nest upon the ground, in a secluded place, beneath the shelter of low bushes, long grass, or weeds. The maternal instinct is well-developed in some hens: in others it is so lacking that they even destroy their own young, or leave them to perish from neglect. The period of incubation is from 27 to 29 days. The pea-fowls have strong local attachments, and they rarely leave the place where they have been reared and fed. They are sensible of kind treatment, and will become very tame when gently used and petted. They have a habit of roosting high, and will choose an elevated place on the top of the highest tree or buildings to which they can gain access. When but three days old, the chicks are able to reach a roost two or three feet high; and if they can mount from one step to another, they will follow the old birds to their highest roosting places. The birds are naturally shy, and their treatment must be regulated accordingly. The proper feed for the young pea-chicks consists of hard boiled eggs, cracked

wheat, coarse oat-meal, and bread-crums; and they will soon hunt after and consume insects and worms of all kinds. It is necessary to protect the young birds from wet and cold, and they require the same care which is needed for young turkeys.

A Small Ferry-boat.

We have a number of inquiries for a method of crossing rivers by means of a boat that can be

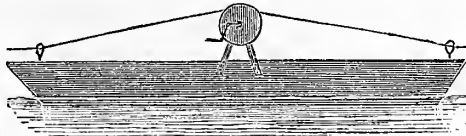
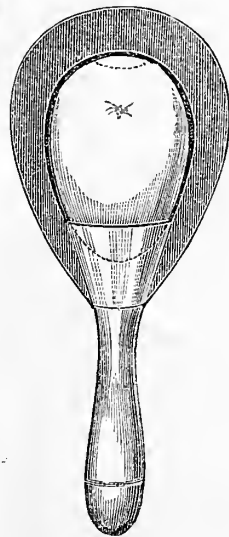


Fig. 1.—THE FERRY-BOAT.

drawn from one bank to the other by a rope. We suggest the following plan:—Set a post firmly in each bank of the river, and attach a rope to each post. Make a skiff, or scow, such as would be convenient, and attach a ring-bolt at each end, on one side, and have a winch with a grooved wheel at the middle, as shown at figure 1. The rope may be made to take one turn around this wheel, and by working the winch the boat will be easily drawn from side to side. When the current is swift during high water, and there would be a strong side pressure upon the boat, the following plan can be pursued, by which much hard work may be avoided. Two ropes should be provided, one fastened to each end of the skiff, and each fastened to the post upon either bank. When the stream is to be crossed, the forward rope is pulled until the boat is in the current, when it is made fast, while the other rope is left to run out as it may. The boat is, of course, carried down stream in a direction across the river until it reaches the opposite bank; when out of the strong current, it may be hauled up to the post and made fast. In returning, the same method is pursued.

An Egg Tester.

The accompanying engraving represents a contrivance for testing the freshness or fertility of eggs, useful in the household or to the poultry-fancier. It consists of



EGG TESTER.

shows a fresh or infertile one to be perfectly clear, while a fertile one that has been incubated two days will show the embryo, as in the engraving. Infertile eggs may then be taken from the nest.

A Cheap Pig-Pen.

In response to inquiries, we present a plan of a convenient pig-pen that will cost less than \$25, exclusive of labor. Nine posts of cedar or chestnut are set in the ground one foot, and projecting as far above the surface; arranged as in figure 1.

Sills of 4 x 4-in. are laid upon the posts, with a cross sill in the center, and halved together at the joints. No wall posts are used, the stout boarding being made to serve the purpose. The structure is 8 feet each way, or can be altered to suit the ordinary length of boards when built. To put up the walls begin at the bottom, fastening on the corner boards first and nailing their edges firmly together. Strips of 2 x 4 serve as plates. Floor beams of 2 x 6-in. are laid upon the sills, 16 inches apart, and the floor upon these. For a roof,

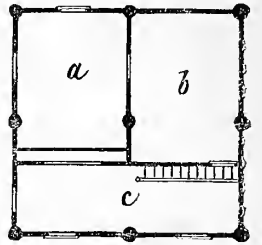


Fig. 1.—PLAN OF PIG-PEN.

rafters of 2 x 4-in. stuff are placed 4 feet apart, upon which three 12-inch boards are laid, one at the peak, one at the eaves, and one between these two. The roof boards proper, 8 feet long, are put on lengthwise of the rafters, and battened. Spaces for the doors and windows should be left or cut in the boards as they are nailed on. There should be two small windows, placed as thought most desirable.

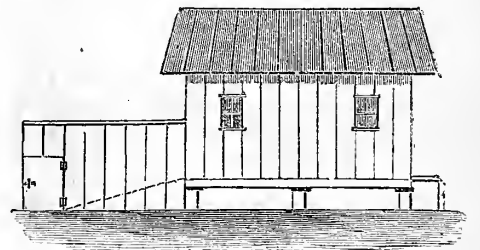
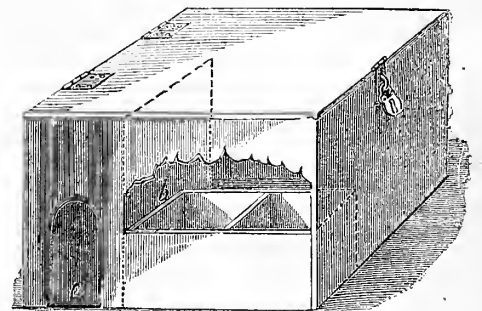


Fig. 2.—VIEW OF PIG-PEN.

The interior division should be as shown at figure 1. The feeding place is at *a*, in which is a trough, with a sloping board in the passage, *c*, by which to pour in the slop. A sleeping-room is at *b*; the partitions of which should be 4 feet high. A few loose boards will be required for a floor in the loft to make a space for stowing corn for feed. The building is raised one foot from the ground for the sake of avoiding rats and other vermin. A sloping gangway leads to the yard; into which it is also convenient to have a gate from outside.

A Lock-up Nest Box.

It frequently happens that a nest box that will lock up is desired. Such a box may be made 3 feet square and 18 inches deep, which will be large enough for two nests. The door is at *a*. At *b* is a partition extending half through the box, and at the inside of this are two nests about 8 inches deep,



A SECURE NEST BOX.

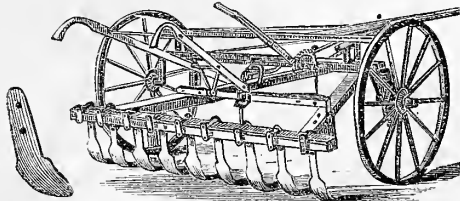
16 inches long, and 12 inches wide. These are seen through the side of the box, which is partly removed for this purpose. For small breeds of poultry, the box may be made considerably smaller. Such a retired nest as this exactly meets the instincts of the hen, and it becomes very acceptable to her.

Farm Experiments.—There has never been so much experimenting by farmers as there is the present year. Great facilities for this kind of investigation have been given of late, and the tone of

the agricultural press has been such as to awaken an active spirit of inquiry in this direction. It is to be feared that some disappointment may occur by reason of unexpected failures to reach satisfactory results. Now, in experimenting, there is nothing so useful as patience. One year is far too short a time for a result that will be of any value. The results of experiments are useless, except as they are compared with each other, and it is of little avail to make trials and tests, of this or that, unless they are made methodically, and with great care, perseverance, and patience; and above all things besides, with the most accurate noting of all the conditions as to time, place, season, and other circumstances, as well as of the results. There can be no more valuable labor if properly carried through to the end than farm experiments, but if they should be abandoned after the first year, because the result may not be what was expected, they had better not have been begun.

Cultivator for Small Grains.

It is a well-known fact, that the cultivation and weeding of the wheat crop, largely adds to the yield. It is a usual custom upon the fertile English farms,



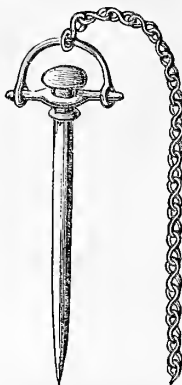
A GRAIN CULTIVATOR.

not only to hoe the wheat, but to pull every weed by hand that is not destroyed by the hoe. In this country hand labor is too costly to admit us to do this, but the necessity for it is so apparent, that farmers would at once adopt it if practicable means were provided. A very promising and quite effective machine for this purpose has been invented by Mr. A. B. Travis, of Mich., with which the writer has had an opportunity of experimenting. It is intended for the cultivation of any crop sown, or planted in drills, and we have tried it upon wheat, corn, and mangels. It is drawn by two horses, and it carries a row of teeth fastened to a frame which is loosely suspended to the axle so that it can be made to oscillate sidewise several inches. This renders it easy to follow the irregularities of the drills, and to avoid interfering with the plants in the rows. The teeth, shown in the engraving, are intended for working in small grains, wheat, rye, oats, or barley, and they can be moved to a less or greater distance apart, as desired. On the left of the illustration the form of the teeth is more clearly shown, a small one being used for wheat, and a broader one for corn, or roots. In using the cultivator for the latter crops, the center tooth is removed, leaving room to pass a row of plants without touching them, the remaining teeth being adjusted to very thoroughly clean the whole space upon each side of the row. Thus two rows are cleaned at each passage. In using this machine upon corn, this season, we cultivated the rows in two directions, the crop being planted $3\frac{1}{2}$ feet apart each way; and very little hand work was afterwards needed, although the ground was very weedy and the weather after planting was unusually rainy. The cultivation of wheat is, without doubt, an improvement greatly needed in our present practice. We need very much to make this crop more profitable. The present average is far too small. Instead of 10 or 15 bushels, it should average 25, and the best crops ought to reach 60 bushels in place of 40. With proper manuring, and freedom from weeds, we can reach the latter yield upon drained soils. If we could hoe the wheat, we might hope for an increase of 50 per cent in the yield, where the soil is sufficiently fertilized. If others do it, why should not we as well? We think we may reasonably look for success, and expect soon to have a wheat horse-hoe that will be cheap, effective, and that may also be used on the corn and

root crops, at least in their earlier stages, leaving the later operations to be performed by the plow.

Tethering Cows.

In pasturing a flock of sheep, or a herd of cows, upon a heavy growth of fodder, of whatever kind, the whole field will be traversed the first day, and a considerable portion be greatly damaged; but by confining the sheep within hurdles, or by tethering cows, the rest of the field is neither trampled nor soiled, and nothing is wasted. The herbage is consumed only within the limits of the tether, the remainder is left to grow until required, and the portion pastured soon regains a fresh growth, and is evenly manured at the same time. By tethering, we acquire all the advantages of a system of soiling, without the labor of cutting and carting of fodder, and of hauling the manure made in the yards—that is, if the droppings are evenly spread over the field, as they should be, and not permitted to remain in patches. By the use of the tether-pin illustrated below, cows can be confined within proper limits without risk of winding up the chain on the pin. The swivel-ring upon the top turns as the chain is drawn around, and as the head is pressed down close to the ground, there is nothing upon which the chain can wind. In using the tether, it is a good plan to advance the pin each time to a sufficient distance in a direct line, thus feeding off a strip through the field or plot of ground. When such a strip has been eaten down, begin again next to the first starting point. In this way the grass is eaten off regularly, and when the field has been all fed off, it may be gone over again. Where a number of cows are tethered out, they may be ranged in a line, and made to advance regularly through the field. If the herbage is dense and tall, a half circle of twenty feet radius would be nearly sufficient for a cow for one day, so that the pin may be advanced the length of a twenty-foot chain, only,



TETHERING-PIN.

each day. A very near estimate may be made as follows: A crop that will produce $1\frac{1}{2}$ tons of hay will cut six tons of green grass, which is equal to about a quarter of a pound to a square foot. A cow will consume 80 lbs. of fresh grass per day; hence, 240 square ft. should supply a cow with one day's fodder, which is equal to a space of 20 ft. long by 12 wide. In this way the space fed off may be accurately apportioned. If the grass is about half grown, twice 240 square feet would have to be allowed, in which case the pin should be moved ahead at noon each day, and so of other yields.

A Wooden Stable-Fork.

The writer has recently seen and used a stable-fork made of wood. For use in arranging litter about horses and cows, and in lifting fodder, whether whole or cut into chaff, it is very convenient. As the points are not sharp, the danger to man and beast, incident to the steel fork, is avoided, and it is much lighter to handle than a steel fork. The engraving given in the next column sufficiently describes the implement.

Our Foreign Markets.—The extraordinary increase in our foreign exports, chiefly of Agricultural produce, by which the balance of trade has been made to fall in our favor to the extent of more than \$250,000,000 during the past year, has had a very beneficial effect upon business. It has prevented the export of gold, and has greatly helped to keep up prices. It has been this foreign demand which has eased the provision market, greatly depressed by a production of meat, much in advance of that of any previous year. Fortunately

we have been able to open new outlets for our products, and these once gained, will be likely to become permanent. Heretofore, Great Britain has been the chief customer for our grain, meats, and cattle, but recently a live cattle trade has been opened with Germany, and shipments of beef, pork, and mutton, have been made to France. The consumption of meat is rapidly increasing and out-



MANURE FORK.

stripping the production in France. There is no other source of supply for that country more convenient than the United States, and the probability is, that we shall be able to secure the greater part of it. For the last three years, France has increased its imports of provisions to the extent of over \$30,000,000 annually, taking \$207,600,000 worth in 1877. Her imports of cattle for the first three months of the present year, exceeded in value \$7,200,000; the number of animals being over 400,000; of which 315,000 were sheep, and 49,000 swine; thus in one year that country needs to purchase a very large number of live animals, in addition to the supply of meat, both fresh and cured, and fish. To secure this market it is necessary to furnish desirable grades of animals. At the present, we are most deficient in our supply of mutton sheep, in which respect we are slowly improving, but it is essential that we lose no time in raising the character of our live stock, so that we may be able to meet the demands of those who will willingly become our customers. The bulk of this foreign trade in live animals would naturally fall to the share of the Eastern parts of the country, which are near the shipping ports. No other section needs more the good effect which feeding stock must produce upon its system of agriculture than does this; and none can make the business more profitable.

Country Parsons.

In former times the English country parson was the best farmer in his parish, and set the example in the use of improved implements and methods of practice. He was looked up to as a guide in temporal things as well as spiritual; and his care of the material interests of his flock gave him better knowledge of their moral wants. To-day, the farming parson has largely given place to the pale-faced dispeptic who shuts himself among his books, and knows and cares little for the every-day affairs of his people; but specimens of the old stock are still found in rural England, and the name of a rector or vicar is often seen in their agricultural papers, signed to able writings on theory and practice. In America the farming parson is a scarce personage, though examples are not wanting. The author of the genial "Tim Bunker Papers" is an excellent farmer, as well as pastor, and is held as a safe authority by his neighbors in things agricultural. Even Mr. Beecher wrote a book on gardening, and if his lot had been cast in a country town, he would have been a great agriculturist. A score of such might be cited; but many readers will have some public-spirited, wide-awake village minister whom they would set up as an example to their own spiritual directors.

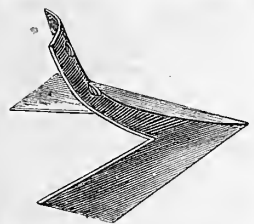
We need more farming parsons. The country clergyman, if he would exercise the greatest influence among the people, must take more interest in their crops and herds; *he must have crops and herds of his own*. His mental training should fit him to be a good observer of nature, and of methods of practice. His opportunities for study of books and papers should enable him to keep posted on all the progressive ideas and methods of the day. The farmer needs all the precept and example—particularly *example*—in good agriculture that he can get. The country clergyman has such influence that he may do agriculture an incalculable amount of good; and if he will mingle more of nature and everyday

life in his Sunday sermons, he is sure to make them more acceptable and effective, than when all composed of the text, precept, and theory of books.

If not satisfied with the examples of success in this line among his acquaintances, let the parson turn to his beloved tradition. Even the Head of the Christian Church taught by practical labor as well as by oral moral precept. The monks of the middle ages were the preservers of the best of agriculture of the earlier times for those who came after the dark ages had passed; in them was possessed all the farm lore of that day. And history tells us that for long years thereafter the clergy were the pioneers in agricultural progress. The spirit and thought of the people, and the needs of the calling for men of thought engaged in its work, open to the country minister an inviting field, and a promising harvest of increased influence.

How to Kill Quack Grass.

The writer has been engaged for two summers in eradicating this pest from fields of corn and potatoes, and the ground, until recently, was apparently as full of roots as when the work was begun. Ordinary cultivation does not seem to have any effect on it. We give in next column an illustration of the plant, by which it may be readily recognized. It will be observed that the grass has a long-running root-stalk, with roots springing from it at very short intervals.



Buds, one of which is seen at *a*, start from the root-stalk, so that if it be cut into small pieces, each bud will send up a shoot, and form a plant, which in turn will spread in the same manner. The spike (seen at the right) has its spikelets arranged as in wheat (*Triticum vulgare*), with the flat side towards the stem. Its manner of growth renders special treatment necessary to destroy it. Two methods may be used, in conjunction or separately: one is to employ a cultivator with teeth, made as in fig. 2, having an edge of steel that can be ground sharp. This should be run about an inch deep, when it will cut off every shoot, leaving the root intact. If this is done frequently through the season, our experience is that the roots die in time, their vitality being exhausted in the effort to throw up new buds. The other is to use a cultivator, or grubber, with teeth similar to those shown on page 256 (July), fig. 6. This tears out the roots, when they may be gathered and burned. It is not safe to throw them aside, as they will sprout after the first rain, and send out new roots into the ground.

Village Improvement.

BY E. W. B. CANNING.

The Laurel Hill Association, of Stockbridge, Berkshire Co., Mass.

This Association had its beginning in the year 1853, and was set on foot entirely by the efforts of one devoted lady—now Mrs. J. Z. Goodrich—whose personal and untiring labors to arouse the people resulted in an organization which has not only secured to the town incalculable benefits, but has become the inspirer and the model of similar associations in other States. [An account of a more recent effort of this kind was given in February.]

After a thorough canvass of all portions of the town, by way of preparation, a meeting was held in August, which proved an enthusiastic success. Besides its own citizens, many sons of the town, settled elsewhere, were present, or responded by the proxy of a liberal subscription. All the preliminaries of a regular organization under the General Statutes of the State, were transacted. By its constitution membership was obtainable by an adult on the payment of \$1, and of 25 cents by a child, or, on the part of the latter, by the planting of a tree under direction; and every child was en-

couraged by this means to erect a memorial of him or herself, to bear thereafter the name of the planter.

A remarkable knoll, where magnificent rocks are overhung by a forestry of oaks and pines, was purchased some years previously and presented to the village as a pleasure ground, by a public-spirited citizen. An abundant undergrowth of Laurels, suggested a name for the locality, and also the name of the Association. An aggregate of about \$1,400 in cash and available subscriptions enabled it to commence operations with vigor. Its attention was primarily directed to improvements upon this hill; then extended to the village cemetery, whose ruinous fence was replaced by a tasteful structure of marble and iron, within which, a year or two later, was set a hedge of Norway Spruce. The latter is now kept about 15 feet in height, and is a superb wall of perennial green. Within this enclosure walks and drives were con-



QUACK-GRASS (*Triticum repens*.)

structed, shrubbery and trees planted, leaning monuments set perpendicular, and provision made for repeated mowings. Then the streets of the village were taken in charge; sidewalks straightened, trimmed, and gravelled; crossings laid; gutters constructed with regard to thorough drainage, and shade-trees set along the sides of every street. Year after year these improvements were pushed farther, and along the roads leading into the town, and the opportunity for pedestrian exercises greatly enlarged. In undertakings involving more expensive labor—such as grading and working the roads through and near the village—the Association has acted in concert with the municipal authorities, adding its own to the town's appropriation, and thus securing a direction in the enterprise. The two have thus enjoyed mutual aid, to the invaluable advantage of both.

The question is often asked us, Were there no opponents of this crusade of improvement?—Yes—but they were not numerous, and no long time was required to conciliate them entirely. It is not in human nature, when one puts his premises in order and beautifies them with taste, for his next neighbor to endure for long the contrast suggested by the neglect and dilapidation on his own premises, and the chances are that he will not only not only fall in with the prevailing spirit, but become a formidable rival in betterments with the

other. The little labor and trifling expense necessary to effect a change in his surroundings, of which, when made, he can not but be proud, ere long convert him from a brake to a spoke in the wheel of progress, particularly when he comes to find—as he will—that there is money in the operation.

Once a year, in the month of August, our Association holds its festival on Laurel Hill. A turf rostrum built against a huge overhanging cliff is the nucleus of operations. On that rural platform sit the officers and invited guests. Around and in front, beneath the shade of the oaks, on the level plat that once formed the Council-ground of the Housatonic Indians, stand or sit the town's people; the numerous summer sojourners and visitors from the neighboring towns, whom the occasion attracts, forming an appreciative audience, sometimes of several hundreds. After prayer (and often music also), the choice of officers, and the annual Report of the Executive Committee, an oration is pronounced—usually by some distinguished native of Stockbridge—which is supplemented by brief offerings in prose or verse, and extempore speeches from visitors. After some two hours of these pleasant exercises, the occasion is closed—at times with a dance by the young people on the verdant sod, to the music of the band. This is peculiarly the village festival, and tends to keep alive and transmit the influence of the institution to which so much pleasure and profit are due. In the course of its existence of 25 years, the records of the L. H. Association show an expenditure of \$6,692, with the following as some of the results:

1. The acquisition by legacies of more than \$4,000, most of which has been invested in public funds; the revenue from this, with the annual subscriptions, affords available means and secures the permanency of the Association.
2. The setting of 1,686 trees, besides several hedges. These, from mere saplings have become magnificent specimens to afford a grateful shade and be the joy and pride of coming generations.
3. Well ordered streets, sidewalks, gutters, and crossings, rendering locomotion convenient and agreeable at all seasons.
4. A general tidying up of all the private dwellings and premises throughout the community, rendering ours, externally, the finest village in Western Massachusetts—the subject of admiration by all visitors and sojourners.
5. The growing education of our people in the beautiful in nature, aided by art, tending to diminish rudeness, and to the promotion of morality.
6. An increased value of real estate of from 20 to 100 per cent. Trees planted by the Association in its infancy in front of some humble premises, have, on the acknowledgment of a later purchaser, added \$500 or \$1,000 to his offer therefor. Seldom is a larger income returned from so small an outlay.
7. An example which has been copied by scores of communities that have obtained our constitution as the foundation of similar organizations in distant localities. Such applications continue of frequent occurrence.

Emasculate the Dog.

With few exceptions, there is no place for the dog in agriculture. His ravages among the flocks in many places are an insurmountable bar to sheep keeping, rendering, as it does, so costly a watch over the sheep by night and day as to swallow up the profits. What can be done about it is not so clear. Those who wish to have dogs can hardly be prevented, and the impossibility of keeping the animals under control is evident. So is also the difficulty of recovering compensation for damage where the law provides for it, and the undesirableness of constant and costly litigation for this end, which is a poor remedy, even if successful. We gladly noticed in a recent article in the "Forest and Stream," a suggestion, which seems to be practical and practicable. It is simply to bring these animals under the same control which is effective in restraining others, viz., to cause all male dogs, except those kept for breeding, to be emasculated, and to suffer none others of this sex

to go at large. In this way the present overwhelming increase of the race would be stopped

crops, and clover, is yearly widening; and that under cotton at the same time is only slightly diminishing; thus leaving the cash crop, nearly, if not quite, as productive as ever; but rendering the expenditure for food and fertilizers, very small, or completely avoiding them. But it is always safe to have two things to depend upon, so that if one fails, the other may remain, and wool is precisely a companion crop for cotton in this respect. Besides, with wool there is mutton, which is a food crop, and sheep manure is of the richest quality.

Wool is always salable, and is the staple of a large home manufacture. It is worth more in many places, at a distance from the seaboard, than on the coast, if there are mills in the locality to work it up. Mutton and lamb, if of fair quality, are always salable to the local butchers, and provide a very agreeable fresh food for the farmer's family. Sheep will thrive excellently in the Southern States. There are vast tracts of land, notably, the pine woods and table lands of Western Georgia, the Carolinas, and Eastern Tennessee, which are unsurpassed as cheap sheep-walks. In the South, sheep require less feeding in the winter, than in any other part of the country, California excepted, perhaps. Root crops may be grown and fed off from the ground by a "penning" system, and thus the soil be richly

and cheaply fertilized and prepared for cotton or corn. Large tracts of adaptable land, can be

furnish excellent pasture for sheep; among these are the so-called Wire-grass, Bermuda-grass, Crab-grass, and Broom Sedge. Other plants of an astringent and resinous character grow in the old fields and pine woods; and Blue-grass of the best kind grows abundantly upon the table lands. From ample experience, it has been found, that fine wool, and wool of the common Merino crosses, can be grown very profitably in the South; flock owners of large experience, have rated the cost of growing wool under the most favorable circumstances, as low as 6 cents per pound. The climate enables the raising of early lambs for Northern markets, to be carried on with the greatest facility; and the easy communication with the North, as well as markets of the South, ensure a ready sale of the products.

The Aconite-leaved Geranium.

It has more than once come in our way to state that the plants popularly known and cultivated as Geraniums, did not belong to the genus *Geranium* of botanists, but were classed as Pelargoniums. There are differences in the structure of the flower distinguishing *Geranium* from *Pelargonium*, which need not be given here; besides these, the Geraniums are, with very few exceptions, herbaceous plants, while the Pelargoniums, as a general thing, make woody stems. We have several native species of *Geranium*, notably the Cranesbill, which is common in all the States west of the Mississippi, and is well known for its remarkably astringent root, much used in domestic medicine. The European *Geranium sanguineum* and one or two other species are not rare in collections of herbaceous plants, where they are valued for their compact habit and abundant bloom. The species here figured, *Geranium aconitifolium*, the "Aconite-leaved Geranium," is a native of Switzerland, and is interesting as an instance of the renewed popularity of a very old plant. It was introduced into the gardens of England over a century ago, but it is only recently that its remarkably fine foliage—which has the shining green of the Aconite, from which it is named—and abundance of bluish purple flowers, have attracted attention. It is now regarded as a useful hardy bedding plant in England, especially for its early and abundant bloom. We are not able to testify to its hardiness here, but have put out a row as a margin to a bed, and expect to be able to report that it has survived the winter. At any rate,



THE ACONITE-LEAVED GERANIUM.—(*Geranium aconitifolium*.)

at once, and the cruelties practised by the lawful "dog catchers" be avoided. At present we permit an indiscriminate multiplication of dogs, and annually carry on a war of extermination against them, at great cost and suffering. This is simply making trouble for no purpose. There is a growing disinclination amongst farmers to keep a dog of any kind, and the great majority are preserved solely to gratify the desire of the children to keep a pet or a companion. If the law which applies to male domestic animals of other kinds were brought to bear upon dogs, and these were restrained just as rams, boars, bulls, and stallions are, there would be a prospect that the evil would essentially diminish.

Sheep Farming for the South.

Exclusive cotton growing is an unsatisfactory business. It has brought many planters to bankruptcy, and more into debt; and the advice is given, "raise corn, grass, anything but cotton." The *American Agriculturist* has for many years advocated the growing of a variety of crops in the Southern States, to such an extent as would involve all the planters capital and attention. First, food crops; then crops to consume upon the farm, and then crops to sell, is a judicious system of management. The Southern farmer then has food, meat, manure, and money; and in this case, the money is more apt to stay with him than that procured by the sale of cotton, from which is deducted the cost of fertilizers, food, interest, etc., and a very small balance, if any, is left for the planter and his workmen. It is encouraging to note the change which has occurred of late years' in this direction, and the consequent improved condition of the farmers. The acreage under wheat, corn, oats, grass, fodder

cheaply procured in many parts of the South. There are several varieties of wild grasses and other plants which grow spontaneously, and which

should it fail to be hardy, it is an admirable plant for a cool greenhouse, both on account of its fine foliage, and the abundance of its lively flowers.



THE FOREST ROSE.

New Strawberries of Promise. "Crescent Seedling" and "Forest Rose."

BY E. P. ROE.

Though far from being a veteran in small-fruit culture, I have already become convinced that Nature does not concentrate every excellence in any one variety. As with our circle of acquaintances, so it is with our lists of fruits, we cannot dwell on the character of even the best of them without recalling faults as well as good qualities. We must bear with our friends' foibles, if for no better reason than that we are in need of forbearance ourselves; but we are under no obligation to enumber our gardens and fields with old acquaintances in the way of fruits, if new and better ones are to be had. If one might judge from the catalogues sent out, it would seem that the public were offered a dozen or more perfect strawberries every year; but in most instances, these new seedlings appear to be like the small children that astonish the home circle, but make little or no impression on the world at large.

The two strawberries that head this article promise to be marked exceptions to this rule. Their promise in the localities where they first appeared, has been so far fulfilled in my own grounds, that the Editors of the *American Agriculturist* feel warranted in asking me to "report progress." Mr. T. B. Pope, of Newburgh, N. Y., an artist well-known for his excellent delineations of fruit, made accurate sketches from clusters of these varieties. Each berry was drawn from actual measurement, the aim being to represent the average size, instead of to mislead by presenting a few unusually fine specimens.

I hardly know what to make of the "Crescent Seedling." It has been called the "Poor man's Strawberry." I think that it might be called more aptly the "Lazy man's Strawberry." As I have seen it growing and bearing this year, it would seem that the picking of the fruit was the only labor worth naming involved in raising this berry; but this item of picking will go far toward making up for what is lacking in the work of cultivation. The two marked features of the "Crescent Seedling" as I have seen it in several localities are: a tendency to take entire possession of the ground—crowding out the weeds as the northern tribes shouldered weaker races aside—and of literally covering the ground they grow on with fruit. It is claimed that it will yield at the rate of 15,000 quarts, or about 470 bushels to the acre. This seems incredible, and as yet I do not believe it to be possible under wide and general culture. If it will yield 300 bushels to the acre, under good treatment, it will, in the estimation of many good judges, work a revolution in strawberry culture. The case has been stated to me in this form: "Any farmer, with ordinarily good corn land, can set out an acre or more of this hardy, prolific berry, and flood the market with the fruit. Therefore, the raising of strawberries will become unprofitable for those who make it a specialty."—I do not believe this.

Fine fruit will always bring a good price; and no variety will produce *fine fruit* under slovenly culture. The market will be "glutted" with small soft berries; and the "Crescent" will, I think, be both *small* and *soft* if allowed to mat the ground with plants, according to its tendency.

Its lack of firmness—of good shipping qualities—will, I imagine, prove its chief fault. I would advise growers—especially those near to markets—to plant it liberally, but on no account, as yet, to abandon the "Wilson" and other varieties that have proved profitable for many years. I know the *American Agriculturist* will endorse my warning against putting "too many eggs in one basket," especially a comparatively new and untried one. The "Crescent" originated with William Parmelee,

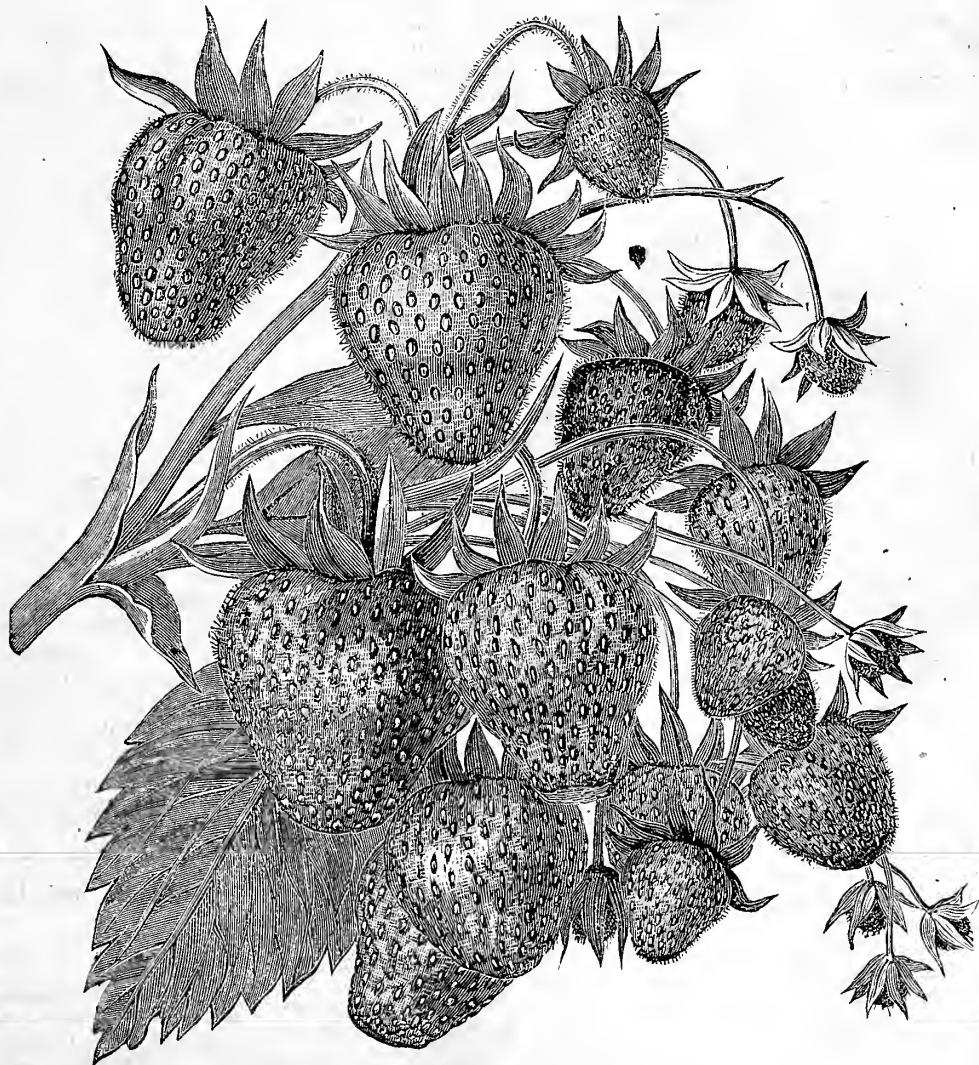
from one season's observation, the "Crescent" ripens about the same time as the "Wilson," and so is one of the earliest varieties.

The "Forest Rose" is decidedly different from the "Crescent" in many respects, and surpasses it in flavor, beauty, and especially, in its shipping qualities. I doubt whether we have a berry better adapted to long carriage. But thus far it has not proved with me anything like so productive as the "Crescent." It is but another illustration of the truth that all the good qualities are never found in one berry. I exhibited the "Forest Rose" at the Queens Co., N. Y., Fair, this summer, and it took one of the 1st premiums, and was greatly admired. It suffered less from transportation than any one out of 36 varieties I exhibited there. I am grow-

ing it on three kinds of soil—the stiffest kind of clay, a light, moist soil, and a gravelly knoll—and it is doing well in each instance. The foliage thus far, with me, has never turned or rusted. The most emphatic way in which I can make known my hopes in regard to it, is to state that I planted it more largely than any other kind last spring.

It is a chance seedling, and was discovered by Mr. J. A. Fettes, of Lancaster, O., while hoeing in his vineyard, about seven years ago. Mr. Fettes sold out his right in the seedling to Mr. Leo Weltz. So eminent an authority as Dr. J. A. Warder, after visiting the original plantations of the Forest Rose, made a report to his Society as follows:

"This new strawberry promises, indeed, to be a great acquisition to our stock of varieties. For a long time, 'the Wilson's Albany' has borne pre-eminence as a market berry—for which purpose it is indeed admirably adapted—but cultivators have desired something even much better in quality. Here we have *elegance of form, brilliancy in color, great size and firmness to bear transportation*, all combined with *table qualities* of a higher order than in 'Wilson's Albany', which it surpasses even in



THE CRESCENT SEEDLING.

Esq., in New Haven, Conn., in 1870, and was sent out by Mr. H. H. Smith, of West Haven, Conn. Mr. Smith has been very fair and open in asking all to come and see and judge for themselves, and the berry has really made its way on its own merits. I have seen it growing vigorously and fruiting enormously on light New Jersey soils, for I took pains to see it in four different localities. In some instances, other and leading varieties standing near it had proved utter failures. It has also done remarkably well on damp and heavy soil in my own grounds. The cluster here represented, was from a potted plant set out last autumn. The engraving gives the shape and habit of growth. In color, it is a bright scarlet, and looks well in the baskets. Like the "Wilson," it is red before it is ripe, and in this *immature* state the *flavor* is *poor*, but greatly improves as the berry ripens. It has the appearance of being a "pistillate," although it is claimed that it will bear alone. I noticed, however, that in a field of four acres owned by Mr. Smith, "Wilson's" were planted at intervals, and I would advise that some perfect flowered varieties be set out in the same field or garden. As far as I can judge

field culture. When the enthusiastic proprietor invited some of his friends to visit the plantation to see the *largest strawberry in the world*, the expression was received with a few grains of allowance, and was attributed to the warmth of an over-sanguine owner of a very good strawberry; but after a thorough examination of the bearing plants in different situations, the conclusion was reached that the Forest Rose was at least one of the *very best strawberries known*.—Dr. Warder is excellent authority.

The claims of these comparatively new varieties are presented to the readers of the *American Agriculturist* that they may have a chance to work the mines before they are over-crowded or exhausted. I may seem an old fogey when I say, that while I shall give these plausible strangers plenty of room in which to prove their merits, I shall still stand by my old and tried friends in the strawberry field.

Layering the Strawberry in Pots.—It is not too late for those who would make the most of a rare variety, or who have a small bed and would make a large one to come into fruiting as soon as

possible, to strike the runners in pots. This method, while it can not be profitable in field culture, allows the amateur to save a year, if he will take the small amount of trouble it requires. Small flower-pots, two or three inches in diameter, are filled with rich soil; plunge these into the soil of the bed, each directly under an unrooted runner, or rather the bud of a new plant at the end of the runner—setting the pot down in the soil of the bed up to its rim. Place a small clod, or stone, or forked twig to hold the runner in place upon the soil of the pot, and it will take root in two weeks or so; the connection with the old plant may then be severed, and the new plant turned out of the pot and set in the new bed without any disturbance of the roots. If set this month, well cultivated, and the runners kept off as they appear, a very fine crop may be expected next spring. The layering should be done at once.

Notes from the Pines.

In a fairly large collection of ornamental shrubs, I know of none that is more desirable than the

Double-flowered *Deutzia Crenata*.

I refer to the shrub first introduced under that name, and which has been in our collections for several years. In the first place, it fills a gap, by coming along just after the *Weigela* and other early-blooming shrubs have done flowering, and makes its display about the middle of June. It first gives us a few days of promise, and these show the outside of the petals with a most charming tinge of purplish rose. The few days it remains in this state, are, to my notion, the best; but it after this comes into full flower, and the bush is a sheet of white, as by opening, the interior petals quite hide the outer colored ones. After this excellent shrub had become well established, the nurserymen offered, with some flourish,

Deutzia Crenata flore alba pleno,

which, being interpreted, means the White Flowered Double *Deutzia crenata*. This has flowered with me this season, but is in no respect preferable, indeed, not equal to the older variety. It is true that the flowers are pure white throughout, but give only pure white, while the older kind gives us both the purple-rose tinge before it fairly opens, and at length as good a white as the other....In former notes I have mentioned our

Native *Wistaria*,

Wistaria frutescens, as a much neglected climber. It does not flower until the vine is in full leaf, and its flowers are not so large or of so deep a purple as the more generally cultivated Chinese species. It is for the very reason that it flowers later that I value it. The Chinese is good in its way; still, if I could have but one, I should take our native, as it gives foliage at the same time with the flowers. Having cultivated the ordinary purplish-flowered form, and also the white variety for several years, I was quite surprised to find, in conversation with horticultural friends around Boston, to learn that

The White American *Wistaria*

was quite unknown at that center of horticulture. This led me to "hark back" on the plant, and trace its origin. I found that my vines were sent me, the season that I came to "The Pines," with a very generous contribution of other hardy stuff, from my not very distant neighbor, A. S. Fuller, Esq., and that he procured his original plant from W. R. Prince, of Flushing, who had in his time a most remarkable collection. Beyond this it is not possible to trace its history; but those who knew Mr. Prince in his younger days, are aware that he spared no pains in procuring any new and strange plant that he might hear of, in any part of the country....Several years ago a gentleman in Tennessee (I think) sent me some small trees of

The Dyehouse Cherry,

so called because it originated on the place of a person by the name of Dyehouse. When they came, I, to save them, put them in temporarily where they grew a year or two, and were then set out where they were to remain. This is the first year that they have borne anything of a crop, and

though the trees are not over 6 or 8 feet high, they were fairly filled. The fruit was ripe at least a week or ten days before the "Early Richmond," heretofore the earliest cherry I had, and while about the size of that, is a palatable fruit. The "Early Richmond," even when dead ripe, is, to my taste too sour for anything but cooking.... It is curious to see how flower-fashions run. I can recall cases in which the *American Agriculturist* was the first journal to describe and figure a plant, and I may say the same of the "Gardener's Monthly." The plants, whether of native or foreign origin, have been presented to the horticultural world in these American journals for the first time, at no little trouble on the part of the editors, to procure and grow them, and at considerable expense on the part of the publishers, in giving excellent, and original engravings. Yet, what good does it do?—It is only when these same plants, years after, are brought out in European publications and in the catalogues of European cultivators, that our growers become aware of such things. It would seem that our people can not appreciate the value of a plant unless it has been first endorsed abroad. As long ago as 1868, I saw a bed of

The Japanese Iris (*Iris Kämpferi*)

in the garden of James Hogg, of New York City. The plants had been sent by that most excellent horticulturist, his brother, Thomas Hogg, then a resident of Japan. After they had been in the garden of James Hogg sufficiently long to show that they were perfectly hardy, I, in October, 1870, gave some account of them, with an engraving, considerably reduced in size, it is true, but sufficient to show their great beauty, and how unlike they were to any heretofore known forms of cultivated Irises. Within these few years the Japanese Irises have been introduced into European gardens, have been figured in European journals, and now our dealers have found out, from across the water, how fine they are, and offer them as novelties. Having cultivated them these 8 or 10 years, I can endorse all that the dealers say of their beauty, and hope that they may be as well known as their merits deserve. In the first place, they come into flower after the ordinary garden Irises have done blooming. The flowers are quite unlike those of the ordinary garden varieties, as they spread out in a flat plate, and are seen at their best when looked down upon. They are from four to six inches or more in diameter, and present a great variety in form, color, and marking; there are pure whites, pure blues, and those of the richest imaginable royal purple. In the way of marking, there is the greatest imaginable variety. Nothing can be richer than some of the intense purples and blues with lines of golden yellow, or more delicate than the whites, with net-work of blue and purple, and *vice versa*. With such a marked tendency to vary, no doubt seedlings will be raised finer, if possible, than any we now have. European growers are astir with this Iris, and I am glad to know that Mr. Thomas Hogg, who has introduced so many choice Japan plants, without claiming the least credit, has selected the choicest of his importations to which, as will be seen elsewhere, he has given names and descriptions, and has placed them in the trade, where they will be accessible to those who fancy choice plants....Sometime ago, in speaking with Prof. C. S. Sargent of a brother horticulturist, he remarked, "he knows a good thing when he sees it." I have more than once had occasion to think the same of Prof. Sargent, who not only "knows a good thing when he sees it," but he also takes care that others shall know it, by freely distributing, as well as talking about it. Among the plants that he has been instrumental in thus popularizing is

Hall's Honeysuckle (*Lonicera Halleana*).

In the general confusion in which the genus *Lonicera* is at present, I will not undertake to say to which botanical species this belongs, but as it is in several catalogues as *Lonicera Halleana*, there can be no difficulty in getting it under this, its horticultural name. Any one "who knows a good plant when he sees it," can not fail to appreciate this as a most valuable climber. Its lithe slender stems make it a most manageable plant. I have it growing

flat upon the ground, and running up upon what is part fence and part trellis, and also in pot culture. It is one of those easy-going things that will grow anywhere, and bloom whether 2 or 20 feet high, and—what is more to the purpose—keep on blooming. It blooms right along, all summer. Its flowers, when they first open, are of the purest white; a little while later they are of a delicate buff-color, and before they are done with, become darker still—almost an orange-color. All the while they have a most pleasing perfume. In some former talk I have said something about

Wire-Work on the Veranda

to the effect that one could decorate his veranda, or portico, as he pleased, without having the wire in contact with the woodwork. Serew-eyes of galvanized iron, 4 to 6 inches long, may be had at the hardware stores, and with these and galvanized wire, No. 14 or 16, one can build a framework upon which such vines as Hall's Honeysuckle can be trained, and keep the vines from actual contact with the wood-work, while they appear to completely clothe it....Early peas are for the most part unsatisfactory for their shortness of bearing, the best of them giving but two pickings, at the most. This is all well enough for the market-gardener, who wants his crops all at once, and then can clear his ground for something else. Generally no crop is so unsatisfactory as *early peas*. There is the trouble of sticking, picking, and other time-taking work, for a mess or two. With later peas, like that good old stand-by, the "Champion of England," it is different. One can pick, and come again and again. I had about come to the conclusion that early peas were more plague than profit, when this season, finding "Early Peas" on my memorandum, I asked Mr. W. H. Carson to give me some of his best early peas, leaving the choice to him. I thought no more of the matter, until the peas came to the table. We had, of course, at first some strain of "Daniel O'Rourke," early, and peas, but calling for no comment. Then came peas that *were* peas, and on inquiry I found they were

Kentish Invicta,

with the remark that they were a great cropper, and held out remarkably well. Seedsmen make a point of five days, in the earliness of peas, but I had rather wait twice five days, and get peas like the "Kentish Invicta," than to bother with such flavorless things as the Daniel O'Rourke, by whatever name it may be called—and it has a dozen or more.

Quinces and their Cultivation.

Why is it that the Quince, which is as hardy and as well adapted to our soil and climate as the apple, is comparatively scarce, and commands on the average three or four times as much in our markets? There is seldom, if ever, a "glut" in the market, and prices are uniformly remunerative, bringing the producers for handsome fruit from \$2 to \$4 a bushel, in New York and Boston, almost every season. The apple, in the fresh or dried state, enters into the annual supplies of almost every family, as cider, vinegar, jelly, sauce, and other preparations, and is also a profitable feed for our domestic animals, while not one family in ten knows anything of quince preserves and jellies. It is really one of the most appetizing and wholesome of the sweetmeats found among the stores of our housewives; and the cultivation of this fruit should be greatly extended. We know of no fruit that promises so good returns as this to the intelligent fruit-grower. If we look at the quince plantations, as we ordinarily find them, they are few and far between in the farming districts. The popular fancy is, that the bush flourishes best in a damp soil, and if there be an undrained swale on the premises, we may safely look for the quince bushes there. More frequently than otherwise, they stand in the grass, receive no cultivation, and after a few brief years die, either from stagnant water, or the attacks of the borer. Under such treatment the trees have no chance to bear fruit, and make themselves profitable. The quince wants a deep, rich, rather moist soil, but it should always be well

drained. Good corn land, that will bear maximum crops of grain, will bear good quinces. No fruit pays better for thorough cultivation, and the ground should always be kept under the spade or plow, and should, if we want abundant fruit, receive a good dressing of manure every season. The bush, or tree, requires very little other care than the occasional thinning out of the branches if they crowd too closely. The binning of the fruit, where it sets too abundantly, will increase the size and profitableness of the crop that remains. The fruit, as well as the flower, is quite ornamental, and an attractive feature in October and November. The "Apple," or "Orange Quince," is by far the best variety. It ripens earlier, and brings the best price in the market. The quince is easily propagated from cuttings, and this is the simplest and best method of multiplying a desirable variety. Cuttings put down in the spring, in a moist, well drained soil, a little shaded, will root about as readily as the currant. In making a plantation, the young trees should be set at least ten feet apart, and if the soil is rich, fourteen feet will be none too much.

CONNECTICUT.

[Our correspondent anticipates our intention to call attention to the importance of this much neglected fruit. We give his article as introductory to others we had in mind, going more into details of the culture. There is one point on which we would like information. We have, as hundreds of others have, a dozen or two quince trees, set here and there in by-places. They, situated as they are, seem to be profitable. Has any one of our readers tried an orchard solely of quinces? If so, will he tell us something about their culture in this manner, what are the difficulties in and chief obstacles to the success of an orchard of quinces, and what is the average profit per acre of such a plantation? These are points upon which many would like information. We know all about their hap-hazard growing—for it can hardly be called cultivation—but who will tell us about "quince culture for profit?"—ED.]

Okra—Gumbo.

Okra is a vegetable that is slow in finding its way to the garden and the table in the Northern States, while in Southern families it is in very general use. The plant is much like a large Hollyhock, with yellow flowers, which are succeeded by angled pods, six inches or more long, and over an inch thick. These pods, when so tender that they will break, are very mucilaginous, and give off, when cooked, a large amount of gummy matter. If they begin to mature, they become woody, filled with hard round seeds, and quite unlike anything edible. Though in the catalogues, the plant is called "Okra or Gumbo," the name Gumbo properly belongs to the dish prepared from the pods, rather than to the plant itself, as the Southern cooks make Gumbo without the use of Okra, but substitute the pith and young leaves of sassafras, one of the native violets, and perhaps other plants. The best Gumbo is made with chicken, though veal and other meats are sometimes used, and is merely a stew made thick by the use of an abundance of Okra pods. Gumbo soup is any soup to which sufficient Okra is added to give it the desired thickness. The young and tender pods, boiled and dressed with melted butter, are liked by many, but they are rather too gummy for those who have not become accustomed to them. A dish made of the Okra pods and tomatoes stewed together, is also prepared. One correspondent inquires if we know of any method of preserving Okra by canning. We have not known any attempts at canning the pods, but they are often dried; the pods of the proper age for cooking, are sliced, strung upon a cord, and dried in the same manner as fruit. They are also packed in salt, just as cucumbers are, and when wanted for use, are freshened in cold water.

What May be Done with a Soap-Box.

—The writer's first propagating house was a soap-box—hardly this, for it had neither cover nor bottom. It was the frame formed by the four sides, and over either the top or bottom—which, is imma-

terial, was tacked a piece of strong muslin. This was set in a sandy corner of the garden, and during the summer, cuttings of all kinds were placed in the soil beneath it. Sometimes the cuttings of shrubs were from sufficiently unripe wood, and all grew—sometimes the cuttings were too old and all failed, but take the season through, a wonderful amount of rooted stuff came out from under that little soap-box. Phloxes and Chrysanthemums, among herbaceous plants, were rooted by the dozens; and of even so uncertain a thing as "Bleeding Heart," some took root. This is something within the reach of every one, and we are sure that this, our first attempt in this way, gave us more real pleasure, than could the best propagating house.

New Varieties of Japan Iris.

It is stated elsewhere ("Notes from the Pines") that Mr. Thomas Hogg, who was the first to introduce *Iris Kämpferi*, has selected 20 of the finest varieties of this charming plant, to which he has given names, they having been heretofore known only by numbers. To avoid future confusion, it is desirable that these be placed on record, which we do in the interest of horticulture, and without the request, or even the knowledge of Mr. Hogg, giving, with the names, his brief descriptions, and also the numbers by which they have been designated:

1. *Ichibau*—Light reddish purple, pencilled with white; double; dwarf; medium early.
2. *Prof. Thuerber*—Purplish blue, mottled and spotted with white, fine yellow eye; double; early; first-class.
3. *Princess*—Lilac, finely pencilled with blue; double; dwarf; fine.
4. *Robert Buist*—Dark indigo blue, fine yellow eye; double; first-class.
5. *Mr. Buchanan*—Light indigo blue, fine yellow eye; double; large; extra fine.
6. *Emperor of Japan*—Maroon; first-class.
7. *Pearl*—Pure white; tall; early; first-class.
8. *Dainio*—Dark pink, pencilled with white; medium height; early.
9. *Fusiyama*—White, pencilled with purplish stripes, purple center; tall; early; first-class.
10. *Mr. Chotars*—Light blue, striped and mottled with white; tall; early.
11. *Minister Mori*—White, deeply laced with pink; early; first-class.
12. *Ieyas*—Purplish blue, solid color; tall; early.
13. *Murasaki*—Purple, wavy petals.
14. *Water Nymph*—White, deeply laced and shaded with lavender; tall; early; distinct.
15. *Diabertz*—Deep indigo blue; semi-double; dwarf; medium early; first-class.
16. *Imperial Standard*—Purplish pink, mottled with white; tall; early; first-class.
17. *Ontosama*—Light purple, slightly mottled with white; tall; very early; handsome.
18. *Empress of Japan*—Lavender, pencilled with white; tall; medium early; first-class.
19. *Perfection*—White, pencilled and mottled with purple; dwarf; medium early; fine.
20. *Virginalis*—Double white; extra fine.

The Burn-Heap.—Every garden of any considerable size has much rubbish to dispose of. It is not necessary to argue the value of a compost-heap, to which a large share of the refuse can be taken, to be converted into manure—at least not to any who have tested its value. But besides this, there is needed a burn-heap—and, we may add, what is not exactly a heap, but the reverse—a hollow, or place, to receive what belongs to neither the compost or burn-heap. As to this last, there will be on a large place some ravine to be filled, or low place to be graded, in which the small stones and other incombustible rubbish may be made useful. But there is much material that had better be burned; superannuated labels, pea-brush that has outlived its usefulness, the prunings of trees unavailable for firewood, and most especially those that have been cut away because of blight, the weeds that have been left alone (and the most careful of us have such) until seeds have begun to mature—these and many other things belong properly upon the burn-heap. The heap should, of course, be where no harm can come from it, and be fired from time to time, as fuel accumulates. We do not commend this as merely a method of getting rid of rubbish, but, well managed, it will give a supply of

ashes—a material so useful to the gardener, and so difficult to procure in thickly settled communities. If the ashes are gathered after each burning, one will be astonished at what a quantity may be thus obtained each season from material otherwise quite worthless. It is a trifling matter in the way of labor, but the valuable results are not to be despised.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

Co-operation in Taking Homesteads.

Hard times have driven many persons to seek Western homesteads. Beautiful farms are to be had almost for nothing, except their actual settlement and cultivation. Yet these farms sometimes cost a great deal more than gets set down and footed up in the cash account. A little story has just been told me that illustrates this. It is about a young man who went from this State (Minnesota) further west, secured a homestead, built a small shanty, such as he could afford, furnishing it with the barest necessities for housekeeping, and then drove eighteen miles to the nearest railroad station, to meet his young wife. It was raining hard when they set out for "home," and the ox-team made slow work on the journey. Their clothes were soaked with rain when, late at night, they reached the lonely spot where they should have found a shelter. But the wind had blown away the light cabin, and the cooking-stove, and other heavy pieces of rude furniture were all that were left by the storm. They had nothing prepared to eat, and nothing dry to put on. Early the next morning they started for the nearest town, but the husband fainted before they reached it, and the sick young wife drove the oxen into the strange town,—to find help and friends; let us hope that they found needed aid, but I know nothing further of their story. Of course, this is an exceptional case, but it shows that every precaution should be taken to guard against exposure, lack of provisions, and undue fatigue. It is always a hazardous business for families to break up old associations, and go off to strike root in an entirely new place, far from neighbors, and entirely among strangers.—I am glad to see that better methods are taking the place of the old single-handed efforts at

Making Homes in the Wilderness.

There are colonization bureaus, which aid emigrants to settle in congenial groups, with some defence against the worst hardships of pioneer-life. The Catholic Church, in some cases, looks after members of its own flock seeking homes on the new lands, and settles them where they can peaceably worship God in their own way. In Minnesota there are several prosperous Catholic settlements, carefully planted and tended by the heads of the Church. The Odd Fellows settle people of their Order in pleasant companies, helping them to get a good start in the way of comfortable homes, with pleasant villages and adjacent farming population. Soldiers, seeking homesteads under the acts especially for their benefit, unite in associations, and send committees to find large tracts of good land yet unappropriated, where they may settle in companies and begin at once to enjoy the advantages of civilized life. This method is adopted by others than soldiers, and some of the most enlightened and prosperous settlements in the West have been started in this co-operative manner. Beginning in this way, with united enterprise and forethought, it becomes possible to carry out some of the excellent suggestions made by Col. Waring in his little book on "Village Improvements and Farm Villages." It seems to me, however, that in starting new villages, far from the great cities which furnish a ready market for farm produce in their vicinity, co-operation in machinery and work should be carried further than that book suggests. It should not be too exclusively a farm village, or a settlement of farmers. Of course, mills and factories, and a village population of mechanics and trades-

men would add greatly to the farmer's prosperity and to his social advantages. Enterprising men have founded colonies here and there, with more or less wise forethought for the good of the colonists, as well as for the building up of their own private fortunes. But why should not homesteaders themselves unite, getting their lands at homestead rates, and by associated effort in every way open to them, avoiding the worst evils of isolated pioneer life, and securing for themselves and families intelligent, industrious, and order-loving neighbors? This talk does not seem to me inappropriate for the household columns, since women and children are the worst sufferers from the loneliness and the discomforts of the usual pioneer life.

Maternity Alleviated.

"For lack of knowledge" not only do people die, but a very unnecessary amount of suffering is endured, and especially by the mothers of the human race. I have long wished to do something toward the prevention of this suffering, by telling other women a part of that which I know upon this subject. It falls to my lot to give private advice to a young wife, who suffered so severely at her first experience as a mother, that she looks forward with dread to its repetition. I think she need feel no physical dread whatever, if she is so situated as to carry out the latest approved methods. I confess I felt some prejudice against the new rules, fearing that what might contribute to the mother's ease and comfort, would prove detrimental to her child; but experience and observation have removed these prejudices. The experience was only partial, and was gained by following no rules but natural instinct. The very common desire for a change of diet, especially for acid fruits, is Nature's own voice, and should be obeyed. Apples were scarce and dear four years ago last spring, and I was ashamed to tell how many I sometimes ate at a meal (from five to ten small ones), but no other food was so delicious, and no meal gave me subsequent comfort without at least a single raw apple. A few months previous, I could hardly eat raw apples at all. Then grapes seemed the only food the stomach craved and accepted without nausea. As soon as the great event was over, and a little stranger looked to me for nourishment, the wish for fruit disappeared, and my oatmeal and graham gruel, seasoned with cream, became for a while the sweetest of delicacies. This experience was, for its ease and safety, a marvel to myself and to all who knew of it, and we were soon convinced that fruit diet and out-door exercise had caused the wonder. Since then we have heard of, and personally known, much more remarkable cases—equally beneficial to mother and child. A diet wholly of fruit is not recommended, but fruit should be very liberally used, and such food as contains much mineral matter, and tends to solidify the bones, should be avoided. The unseen growth goes on all the same, except that the bones remain in the cartilaginous state. It is easy to understand that this condition of the offspring saves the mother much pain, and a change to the ordinary diets immediately after promotes the child's full and healthy development. The graham and oatmeal, so useful to growing children, especially because they build up the bones, should be very sparingly used previous to confinement, and cream should be preferred to milk. The fruit diet has a tendency to keep the whole system in excellent condition. Vegetables are better than grain food at this time, beans being most objectionable, and peas and potatoes next. Rice, sago, and tapioca are recommended, and when meats are used, the flesh of young animals is preferred. Stimulants and spices should not be used. A good deal of gentle exercise is advisable, but severe labor and fatigue should be avoided. Household exercise, when not very confining, is excellent, but all the pure out-door air it possible to get, should be taken day and night. Walking is decidedly useful, and no false modesty should prevent a woman from going out freely for the exercise she so much needs. If she respects herself, she will have the respect of all decent people; but enlightened persons will only pity her ignorance, or silliness, if she shuts herself indoors for fear of observation. Of course, a modest

woman does not needlessly publish her sacred secret. The general rules of health, cleanliness, comfortable clothing, plenty of sleep, freedom from fatigue and excitement, regular meals, and none late in the afternoon, are all especially applicable at this time.

High Art and Woman's Dress.

Chief among artists in devising costumes, is the celebrated Worth, of Paris. But it seems that even he cannot do as he pleases, and is not responsible for all the absurdities of feminine attire. A number of American ladies, who were deeply interested in the subject, sent to Worth this question, "What costume can be devised that will be perfectly healthful, and at the same time beautiful?"—This is his astonishing reply: "I have to make the same answer to you that I have made to the women of Europe. The costume of the Persian women is the handsomest upon the face of the earth. It consists of a loose waist, short skirt and trousers, not too loose. I have made this costume beautifully, and hung it up in Paris, but the women will not wear it. I can do nothing more. They must suffer until they are willing to adopt it."

Now, who will dare to say that short skirts and trousers are absolutely and forever unbeautiful? That they are *unbecoming* to isolated women in public, at the present day, I am willing to admit, but I am quite positive that a dress that gives freedom to a woman's limbs will be entirely becoming when the mass of women are neither slaves nor pets, but mutual friends and helpers of men.

Who leads the fashions? We may say a word on that subject at another time. But there is a band of artists, poets, and others of their set over in London, a constantly increasing number, I am told, who refuse to be led about in costume by every fantastic whim that seizes upon the so-called leaders of fashion in Paris. So now we hear about the "Pre-Raphaelite style of dress." The aim is to have a thick waist—"thick like the Venus de Medici, thick like that far nobler Venus of Milo."

The artists declare that the small, tight-laced waists are decidedly unartistic and vulgar, and that the natural beauty of the female figure is lost by destroying its proper healthy proportions. The sleeves are very high on the shoulder, sometimes a little full, to fit the shoulders easily, for they insist that a woman should be able to move her arms, when dressed, as freely as when undressed. Isn't that a modern idea though? I remember well when it was common for women to unfasten their dress-waists if they had to rearrange their hair, their arms were so bound down by the arm-holes cut low on the shoulder, all for the sake of beauty, which *must* be regarded, however uncomfortable its victim. But of the freedom of the lower limbs, I hear nothing yet from the Pre-Raphaelites, except that the skirts must never be tied about the legs. We can wait, however, since the world does move; only let us quietly bear witness to the truth when it is proper to give our opinion, for public opinion is made up little by little.

Oat-meal Mush Improved.

Much better than the old way of stirring the oat-meal into boiling water, is the new way of cooking it in a farina kettle. If no farina kettle or steam-cooker is at hand, one may always be improvised in this way: Set a stone-jar or a tin-pail containing the food to be cooked, into a kettle of water (putting a couple of sticks under the jar, to keep it from direct contact with the bottom of the kettle),

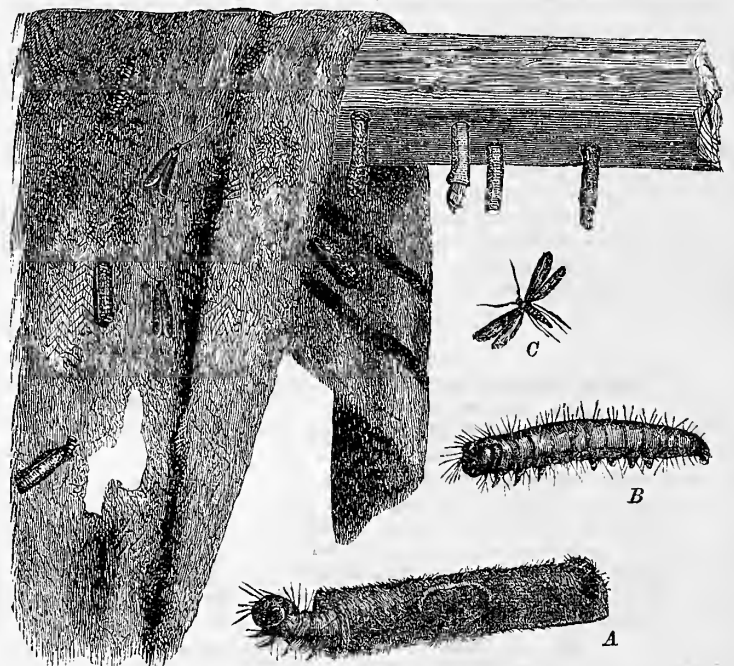
over the fire, and keep the water boiling until the food is cooked. This method is best for cooking cracked wheat and hominy, and now I find it best for oat-meal also. [It is surprising to find one so generally well versed in the best methods of preparing farinaceous foods, proposing as *new* a method of preparing oat-meal and cracked wheat that we have practised almost daily, for years.—Ed.] Probably all of these materials are best cooked with part milk. Oat-meal is excellent when one cup of oatmeal is put into two cups of milk and two cups of water, and steamed for an hour and a half. Rice cooked by the same rule is very nice. No stirring is necessary, the salt being put in at discretion in the beginning of the cooking.

Sponge-Cake Cream-Pie.

One teaspoon of sugar, one teaspoon of flour well mixed with a level teaspoonful of baking-powder, three beaten eggs. Bake in a flat, square tin, and when cold, split open and spread with cream, prepared as follows: Whip a pint of sweet cream, until very smooth and stiff, sweeten and flavor to taste (those who like vanilla will prefer it in this case), and spread it stiff and cold upon the split sides of the cake, placing these two sides together again so that the cream does not appear, and the cake-pie looks like an ordinary cake. One can hardly find a more delicate and delicious dessert dish than this.

The Clothes-Moth.

Some housekeepers seem to have as much anxiety about moths as David Copperfield's aunt had about donkeys. Aunt Betsy was quite sure of her pet aversion, while many housekeepers accuse nearly everything that flies toward the lamp in the evening of being a "moth miller." Being on the lookout for some large creature, they accuse the innocent insects, and generally quite overlook the mischievous one, from its insignificant size. We every



CLOTHES MOTH—MILLER AND LARVÆ.

now and then get letters from those who have put away their store of woollens and furs for the season, which indicate a fear that something more should be done to insure their safety, or inquire about this or that moth preventive compound. Much of this anxiety would be removed, and much trouble in chasing and killing of insects which are quite harmless, so far as clothing goes, be saved, if housekeepers understood the appearance and the habits of their enemy. With this view we give an engraving of the common clothes-moth in its various stages of natural size and magnified. The form in which the insect is most popularly known as "moth," is seen enlarged at A, and of about the natural size on the cloth; it is really a caterpillar, shown naked and magnified at B, but it is rarely

seen, except in its case, or shelter, that it carries about with it. This case is made from minute bits of wool or soft hair which it fastens together with the finest possible silk, which it spins as needed. The insect feeds on the wool, which furnishes it both food and raiment, as it begins to build this case when first hatched from the egg, and goes on adding to it as its growth requires. It does not feed in one place, but travels about, cutting away the nap, and feeding here and there, often leaving a trail of its delicate silk, to mark its track. When it has completed its growth, the insect goes to rest in the chrysalis state, and in due time comes out a minute perfect moth; this, the dreaded moth-miller of the housekeeper, is shown at *C*. Its body is but a little over a fourth of an inch long, and its spread of wings only about half an inch; it is of a light buff color, and has a satiny lustre. So quiet is it in its flight, and so modest its appearance, that one who did not know the insect would not think it capable of so much mischief. In this state it flits about, looking for a dark place to lay its eggs, that will also afford abundant food for its young. The eggs being deposited, the life of the parent ends, and so soon as the young are hatched, they commence anew the work of destruction. These being the habits of the insect, it will be seen that clothing, etc., put away in such a manner that the mother insect can not reach the articles, in order to lay her eggs, will be safe. It is important to remember how small the insect is, and that it can pass through an opening not very much larger than a pin-hole. Articles, if proper care be used, may be made as secure *in paper* as in the most costly moth-proof trunk. Common boxes may be thoroughly covered with *paper*, outside and in, or a well-made box may be made secure by pasting strips of strong paper or muslin around the joints, after the cover is fastened down. Let the package be made moth-tight, and no camphor, cedar-chips, or other aromatic will be needed. When moths are once in a fabric, heat will destroy them; a heat less than that of boiling water (or 160°, it is said), will kill them. So will the vapor of pure benzine, such as is prepared for cleaning silks, etc. With proper precautions to keep them out, it will be unnecessary to resort to any measures of this kind. Before putting them away, the articles should be beaten, and carefully examined, so that no eggs or young moths may be put away with them. It is commonly supposed that June is the month in which special vigilance must be observed; this is an error, as the insects begin to fly in early May, and continue throughout the warm months. It is hardly necessary to add that all the perfect insects, or "moth-millers," that are met with, should be destroyed.

Household Notes and Queries.

Last month it was stated that, lacking just one, 40 housekeepers came to the help of their sister who wished for a recipe for the "Queen of Puddings." We had not then begun to hear from the "outer edge" of our immense circle, and can only say that of late the responses have come in such numbers that we have given up keeping count. It is certainly very pleasing, this readiness with which many others endeavor to aid one of their number; but what is more pleasing, are the good words which come with these responses. Several in furnishing the particular recipe asked for, add others voluntarily, and what we are almost as glad to have, some few ask questions to which they would like replies. All in good time—but now

"The Last shall be First," and we give place to the correspondent whose note has made the longest journey, Mrs. "L. M. S.," Whitman Co., Washington Terr. We would say to Mrs. S., and all others, no matter where they may be, that their contributions are none the less acceptable because they "live so far away." The *American Agriculturist* regards the whole American Continent as its field, and if others have the misfortune to live elsewhere, we claim them as a part of our great family, and extend to all the same welcome.... Our friend over "towards sundown," sends, besides the "Queen of Puddings," a recipe for

Apple Dumplings.—Use good sized, rather tart apples, pare, and remove the cores; envelope each separately in puff paste and tie it in a piece of cloth; boil or steam for one hour. Before serving, remove the cloths, cut a piece from each and put in some sugar and fresh butter; replace the piece of paste, and sprinkle with powdered sugar. If preferred, they may be served with liquid sauce or sweetened cream.... The same correspondent sends

Another Method, called "Apple Roll."—One lb. flour, one fourth lb. of butter; mix with sufficient water to make a not very stiff paste. Pare and slice rather thick, some tart apples. Roll out the paste as for pie-crust, and spread the sliced apples to cover it; sprinkle on a little flour, and roll up as tightly as possible without breaking the paste. Cook it in a steamer, or wrap in a cloth and boil for an hour. Serve by cutting across in thin slices, with sauce of butter and sugar.... Here comes a recipe from "Down East;" Mrs. "S. M. A.," of Conn., gives her method with

Baked Apple Dumplings.—Pare and core smooth apples of uniform size, and fill the cavity of each with sugar and a little cinnamon. Divide the paste into as many parts as there are apples; roll each piece out square, and enclose an apple in it, slightly wetting the edges to make them stick. Bake in shallow pans, and serve with hard sauce.

Rye Minute Pudding.—Heat milk to the boiling point, salt to taste, and stir in gradually rye-flour to make a thick mush. Cook about 15 minutes, and eat with sugar and cream. [This we know to be good, and it recalls pleasant recollections of early home life.—Ed.]

Evaporation.—A lady in Western N. Y. asks whether a liquid will evaporate more rapidly in an open vessel, or in a closed one, like a tea-kettle.—In an open one, most decidedly, as may be shown by taking two saucers of equal size, placing an equal quantity of water in each, and setting them on the back of the stove, or in other warm place. Now put a piece of stiff paper, piece of window-glass, or other material, over one saucer, so as to two-thirds cover it, and leave the other uncovered. The difference in time between the evaporation of the water in the two saucers will be very marked.... One asks if we know any preparation that will

Remove Hair from the Face without injury to the skin. We know of none, and do not think there is such a preparation. With considerable experience in such matters, having chemically examined them, all that we know of contain some form of *arsenic*. In the use of this, injury to the skin is the least danger; a greater one is that arsenic may be absorbed. We have seen many cases in which these have been used, and they leave the dark roots of the hair in strong contrast with the white skin, making the blemish, if such it be regarded, more conspicuous than before.... This brings to mind a most wicked adulteration recently discovered in Europe. *White arsenic* is a very heavy powder, and is so abundant in the refining of some metals, that the trouble is to get rid of it, hence it is a cheap substance, of which the supply is greater than the demand. Recent medicinal journals say it has been used to adulterate

Toilet Powder! Just think of it, one of the most deadly poisons known, used because of its cheapness, to add weight to an article applied solely to the delicate skins of women and children. Fearful and incurable skin diseases upon children to whom it had been applied to prevent chafing, led to the discovery. It is safe to discard all *French* toilet powder. Safe preparations are put up in this country, but each mother can make her own, because the best are only

Perfumed Starch.—Starch, made perfectly dry, and sifted through the finest sieve, may be used, or a few drops of any desired perfume may be mixed with it. Those who have lavender or other aromatic flowers can fold them in thin paper, and place these, with layers of starch, in a box, renewing the flowers every few days, until the starch has absorbed sufficient perfume. The starch will take up a little moisture from the flowers, and it is best to let it be exposed to the sun until quite dry, and then if at all lumpy, be sifted again.

BOYS & GIRLS' COLUMNS.

The Young Microscopist's Club.

Some of our correspondents write about things which are not quite microscopic, though they find our Microscope a great aid in examining them. For this reason, if I answer all those who write, I shall not always talk about really microscopic things. Here is a letter from "C. M. M.," Nahant, Mass., who writes that he has "made

A Very Curious Discovery

this morning—curious, at least, to me. * * * In rambling about the grounds I noticed that the grass appeared spotted with white. Examining it closely, I found it to be little clots of froth, or foam, looking much like spittle, and then I remembered hearing or reading of something called "Frog's Spittle," and thought that this might be it. There were great quantities of this froth, and I cut five shoots of grass with it attached, and took it to the house to examine more nearly. It was not thick nor glutinous, but thin, and likely to drop off, so I put it on a bit of paper, when, to my great surprise, seven little creatures commenced walking about. They were of different lengths, from a quarter to an eighth of an inch—a fat little body like that of our "Hay-makers" or Summer Locusts, with eyes and mouth very distinctly developed, and black, while the body was a greenish yellow, like the earliest leaves of the Sugar Maple. Now, I want to know what these little things are—how they came there—and what they will be eventually. Can you help me?"—The insect is one of a number which are called

Spittle Insects.

It is very difficult to get any definite information about our insects, unless they happen to be destructive to vegetation, in which case Harris in his work, or Riley in his various reports, is likely to have something to say about them. Others have written about insects, but their works, while they may contain the very information we seek, have such miserable indexes, that it is not easy to find what we want.... No doubt most of you understand, for I have often stated it, that insects generally make their growth in what is called the larval state—the caterpillar is the larva of the butterfly or moth, the maggot is the larva of some kind of fly, and so on. In their larval state, insects are often very slow moving and helpless, and there are many curious ways in which they hide from their enemies, especially the birds. Some insects have a way of hiding themselves in the larval state under the remains of their solid food—*i. e.*, completely cover themselves with a shield of their own dung. So these you found hide in the remains of their liquid food. They throw out a quantity of liquid within which they are able to form air bubbles, to make a sort of froth, which completely hides them, and under which they can feed and grow without much danger of being discovered by birds or other enemies. In England, this covering is called

Cuckoo Spit and Frog Spittle,

from the notion that the appearance is caused by birds or frogs. Any one who takes pains, like "C. M. M.," to examine the spittle, can learn the whole story. I do not know which particular insect my young friend found, but his likening it to the "Hay-maker" or "Summer Locust" shows that he was on the right track. In figure 1, is given the perfect insect of the most common of the English spittle insects, which presents a great variety of colors—*Phylloxera bifasciatus*. I have a book on insects by a very scientific American author, and some American species with this habit may be given in it, but as its author did not care to have us know whether he had either these or any other insect in his book, he has made no index; hence, his work is of no sort of value, and its nearly 400 pages may almost as well be blank paper, for all the use they are.... Here is another correspondent, (a young Miss, too,) at Orange, N. J., who has made



Fig. 1.

A Discovery of Another Kind.

Miss Cornelia was transplanting some plants from a window-box to the garden, when she "found these curi-

ous little seed-cups growing in the soil." No doubt of the garden, though she does not say so. She says: "I never before saw anything like them; if they are not of sufficient interest for some of your talks, would it be too much

trouble for you to drop me a postal, telling me the name of a book which would give me some information



Fig. 2.

about them?"—I often come across these little "seed cups," and they are very interesting things, but I do not know of any common work to which to refer Miss Cornelia, and will, for her benefit, and that of others, "talk" about them. Fig. 2 shows the appearance of the curious things. As Miss Cornelia's specimens were badly crushed, I give a drawing of some that I found in my own garden. This is of the natural size, and the affair looks much like a little nest with eggs in it, or, as Miss Cornelia has it, "little seed-cups." These "seed-cups" are really plants belonging to the great order of fungi—other forms of which you know, as toadstools or mushrooms. There are several that have the same general appearance as the one figured—a nest or cup, within which are rounded bodies, that have been likened to eggs, or to seeds. Their botanical names are *Nidularia* (little nest), *Crucibulum* (a crucible), and *Cyathus* (a cup). The little bodies within them that have been likened to eggs or seeds are cases holding the spores, or minute dust-like particles, which in these plants answer for seeds. It is said that some of these egg-like bodies in some fungi of this kind explode, and violently scatter their contents in all directions.

I had began to be glad that the questions ran less upon insects and more upon plants, and other objects, when I opened a long letter from "S. A. D.," Lowell, Mass., who is in trouble with his or her ivy.

Ivy Grown in the House

is very apt to be attacked by a scale louse, and that is evidently what is the matter in the case so carefully described by "S. A. D." If my correspondent—whether boy or girl, I have no clue—can command a piece of soft pine wood, or a not very stiff old tooth-brush, all the needed apparatus will be provided. Then two things more are needed:

A Desire and Patience.

By desire, I mean a real wish to be rid of the trouble, and patience will be needed to carry out the means. The microscope has done "S. A. D." one good service, as I learn from the letter that it has shown exactly what the trouble is—a scale louse that is for most of the time just fixed in one place—is always there if you want to find it, and also when you would prefer not to find it. When it has once fixed itself, it goes on providing for a new brood. Having provided "S. A. D." with the means of warfare—a pine stick or a brush, "he or she" is not the Yankee that I take "him or her" to be if these implements can not be put to good use. You have the scale lice there on the ivy; they will do much mischief if you let them alone. They do not move, but will be there tomorrow and next day, and the day after, but my advice is to attend to them *to-day*. Having a sharp pine stick, or a brush, you can put an end to the trouble; in other words, "kill 'em." I advise a soft pine stick or brush in preference to any other arms, as with these one can easily crush the lice and not injure the leaf or stem of the ivy. You may use soap-suds if you choose, with the brush, but the few times I have had occasion to kill them, I found the dry brush to answer.

The Doctor would like to say a few words to his correspondents, the "Boys and Girls." Some who write for youngsters, call them "My Dear Little Chicks," or, "My Darling Pets." I don't—I mean "Boys and Girls," for I think you will like it best. Well then, Boys and Girls, I would say to those of you who write me, that I do not *answer* puzzles. If you have anything to write about puzzles, send it to Aunt Sue, and if worthy, she will be glad to get it, and will treat it in the kindest manner. It is of no use to send puzzles to me, for I can't answer them, and wouldn't if I could. Several have written to ask me "if three cats will kill three rats in three minutes, how many somethings can be done in so many thingamys?" I am not sure that I have stated the thing rightly, but it makes no difference. If obliged to answer the problem, I should say if the cats were *my cats*, the number of the rats to be killed would be "lots." If it is of the least earthly interest to you to know any possible relation between cats, rats, and minutes, it is not to me—except to wish as many to be killed as possible—but I have no "minutes" to give to the problem. I only say "go ahead cats." The problem appeared, I think, in Aunt Sue's Department, I don't know how many months ago; and the strange thing is, that of late, several youngsters should send the problem, and ask me to answer it! Did you ever hear of Doctor Johnson's, the great dictionary man's, journey in Scotland? He was a very learned man, but was easily bothered over foolish little problems. The story goes that some one proposed to this learned man this problem: "If a herring and a half cost a penny and a half, how many herring can be bought for twelve pence?" It is said that the attempt to solve this problem so soured the temper of the venerable Doctor, that he never could write or speak pleasantly of Scotland thereafter. I am not intending to feel unpleasantly over such matters, but to say that they belong—everything of the problem or puzzle kind—to "Aunt Sue," and

should be sent to her, direct. That I not only know, but care nothing about such questions as this on rat-killing, only the more rats that are killed, the better I shall like it. When you ask me questions about the common things that surround you, when you wish to know anything that I can tell you about, I do not care how many letters you write me. But as everything in the way of puzzles is provided for—indeed you can not please good "Aunt Sue" so well in any other way, as by sending her a regular "pozer"—I must ask just once more all sensible youngsters to send all puzzle matters to her, and *not* to their friend,

THE DOCTOR.

Aunt Sue's Puzzle-Box.

SUNDAY ACROSTIC.

(Selected from names or words in the Bible. The first four lines indicate the initial and final letters.)

- They quailed upon the brink; behind them rang
The chariots thundering and the horsemen's clang;
Death seemed on every side, hut Hands Divine
Smoothed their safe passage o'er the obedient brine.
1. He, like a strong ass, crouching 'neath his load,
His brethren served, and in fair lands abode.
 2. "This place is God's," said Jacob; "here I set
This pillar, lest his warning I forget."
 3. Ah! fatal City! Where predestined war
Smote the rash monarch in his battle-car.
 4. He said,—and stretching to the Queen his hand—
"Ask what thou wilt, the half of all my land."
 5. When conflicts raged, and corpses strewed the plain,
He sniffed afar his banquet of the slain.
 6. Nor cold, nor hot, nor wholly vile, nor pure,
No strength to strive, no patience to endure.

MRS. OGILVY.

SQUARE WORD.

1. My first, a precious stone, we see.
2. My next an evergreen—a tree.
3. My third the name of lady fair.
4. A metal will complete the square.

ISOLA.

CHARADE.

My first all children like,
And older folks as well,
My second most all children like,
As older folks can tell.
Hayes and Wheeler were my whole
Before they were elected.
Tilden and Hendricks were my whole
Before they were rejected.

J. H. B.

HIDDEN TREES.

1. The boys made a large bon-fire.
2. They live up in Erie County.
3. O! a kite! a kite!
4. What a hovel my consins reside in!
5. It was a lonely place, dark and gloomy.
6. Oh! Mamma, please let Eddie go.
7. He may do as he pleases in the matter.
8. Look out for that bee, Charlie!

MARION.

SUBTRACTION AND ADDITION.

(Or taking the last syllable from the first word, and adding it to the next—e. g., 1. To clasp. 2. An ornament. 3. An epistle.—Solution—1. Embrace. 2. Bracelet. 3. Letter.)

1. Consideration. 2. Contrariwise. 3. A bird. 4. A room. 5. A slow movement. 6. To neglect. 7. A water-course. 8. A kitchen utensil. 9. A large rock. 10. Belonging to the skin.

TRY AGAIN.

EASY NUMERICAL ENIGMA.

- I am composed of 10 letters:
My 8, 4, 6, is to allow.
My 9, 8, 3, 10, is a river in Prussia.
My 5, 2, 3, is to deprive.
My 1, 7, 9, 8, is a dance.
My whole was a Confederate General.

CARRIE D. A.

SYNCOPEATIONS.

(Fill the second blank in each sentence with the same word, less one letter, as fills the first blank, without transposition—e. g., The — was only a — wide.—The road was only a *rod* wide.)

1. He made a — in the garden with a —.
2. She said it was her — to be —.
3. He told a long — about some — he drank.
4. They killed the bat in the mine, and his — was sprinkled over the —.
5. The boy tried to — an egg from the nest of the —.
6. Then cruelly tried to — the bird's —.
7. The — had a — on its head.
8. It made him — to drink the —, it was so strong.

JOHN W. WHEATLEY.

NUMERICAL ENIGMA.

- I am composed of 65 letters:
My 31, 22, 33, 29, 43, 15, 4, 39, 48, 61, 52, 33, 13, 41, 51, 42, 49, 50, 28, 55, 54, is the name of an American poet.
My 3, 35, 26, 13, 54, 8, 29, 7, 10, 17, 21, 14, is a Western city.
My 18, 2, 12, 9, 44, 59, 63, 35, 46, 6, 61, 32, 16, is "bell" in an ancient language.
My 24, 8, 5, 33, 23, is a title.
My 38, 20, 15, 25, 65, was the name of a wicked king who reigned nearly two thousand years ago.
My 53, 8, 37, 1, 56, 54, 30, 47, 27, 35, 61, 58, 11, 48, is a ragged fellow.
My 45, 62, 36, 40, 64, 54, is a near relative.
My 23, 60, 19, 58, 57, 34, is clay,—slate.
My whole is a well-known complet.

EHRICH.

ANSWERS TO PUZZLES IN THE MAY NUMBER.

TRANSPPOSITIONS.—1. Care, race. 2. Linc, Nile. 3. Pale leap. 4. Stage, gates. 5. Save, vase.

NUMERICAL ENIGMAS.—1. Good character is gained by many acts, but is lost by one. 2. Shakespeare. 3. Tablecloth. 4. Aunt Sue's puzzle box.

DIAMOND PUZZLE.

Baltimore.
B
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E

HOOR-GLASS PUZZLE.

Humbings.

A R C H F O E
C R U E L
A M Y
S U E
A N G R Y
R A N S A C K

SYNCOPEATIONS.—1. Grain, rain. 2. March, arch. 3. Drill, dil. 4. China, chin. 5. Farm, arm. 6. Stage, sage. 7. Wheel, heel.

SQUARE WORD.

V E D A
E A R L
D R A B
A L B S

DOUBLE CROSS-WORD.—N—O
Oregon, Nevada. G—ude —N

DOUBLE ACROSTIC.

R—abine —T
E—lair —A
A—die —N
D—ayto —N
I—conoclas —T
—O—
—N—
Reading, Taunton.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

ANAGRAMS.—1. Indescribable. 2. Conversational. 3. Mismanagement. 4. Manifestation. 5. Indentation. 6. Confagrator. 7. Interrogation. 8. Affection.

BIBLICAL DOUBLE ACROSTIC.

C—ebul —G
O—N —O
R—ache —L
T—sh —I
N—aph —A
T—abre —T
H—anna —H

SQUARE WORD.

B R E S T
R I V E R
E V E N
S E N S E
T R E E S

CROSS-WORD.—The Eastern war.

NUMERICAL ENIGMAS.—1. It is not all gold that glitters. 2. (Geographical). Eagle, Waukesha, Wisconsin.

SYNCOPEATION AND TRANSPPOSITION.—1. Lady-lad. 2. Onion-moon. 3. Hermit-thair. 4. Recipe-price. 5. Dairy-yard. 6. Easy-say. 7. Infer-fern. 8. Elude-duel.

Thanks for letters, puzzles, etc., to J. R. W. Hattie H. M., C. B. Riggs, J. J. Harrop, O. L. Rice, Evelyn K. N., Kendrie C. H., John W. Wheatley, Laura Irene B., and to others, whose inquiries I hope to be able to answer at some future time.

Correspondents will save time, if they will address their letters (to Aunt Sue) to Rowayton, Fairfield Co., Conn., from July to December of this year. But please remember that AUNT SUE is *not* Orange Judd Co.; the latter must be addressed at 245 Broadway, N. Y. City.

Aunt Sue's Chats.

J. H. B. sends some magic-squares, for the amusement of our puzzlers, wishing to have the figures, from 1 to 25, arranged in a square of 25 small squares, so that the columns, horizontal, perpendicular, and diagonal, shall each foot up to 65. Instead of giving the problem, I will show how any magic-square of uneven numbers (say 3 times 3, 5 times 5, 7 times 7, and so on) can be arranged correctly, every time. Let us take 5 times 5 for illustration. Begin with No. 1 in the square next below the center; go on downwards, diagonally to the right, until you reach the lowest line; then put the next figure in the top line of your square corresponding to the diagonal of another (supposed) square below. (See No. 3 in diagram.)

11		7		3	
4	12		8	16	4
17	5	13		9	17
10		1	14		10
	6		2	15	23

11	24	7	20	3
----	----	---	----	---

When you have written down No. 3, you will again be on an edge, so imagine another square (to the right) and go on diagonally, putting the numbers in your own square just where they would come in another square to the right; the 4 would come in the second horizontal column, first figure to the left, so put it there in your own square. (I trust that the diagram will help my reader to understand my description!) When any figure, already written, blocks you from pursuing your diagonal course, take the next square but one below your last figure. (See 5 and 6.) Go on in this way until you reach the lowest corner on the right, and then always put the next figure in the square next to the top one in the right column (see 15 and 16); then go on as before, and your last number should come on the square just one above the center. I have left some of the small squares blank, so that those

interested in the experiment may finish them for their own amusement. You may make a magic square containing 9,801 small squares, and fill them by the foregoing plan if you choose (?), and it will come out all right.

BETTINE.—I have received a letter from a young lady in Whitehall, Warrenton, Va., about crackers, who writes: "In the May Number of the *American Agriculturist* I see that 'BETTINE' did not succeed in making crackers by the recipe in the March Number, and as I know a very good one I send it. * * * To one pint of sifted flour add one tablespoonful of butter, and one of lard, with either sugar or salt to taste (we think salt the best, but some people prefer sweet things, so you can use sugar if you like); mix with milk-warm water, until the dough is rather stiffer than bread-dough; then heat it until bladders rise, then roll out very thin, and cut into any shape you like, and bake in a quick oven. The only trouble is about the beating; if too much is given, it makes the crackers heavy, and if not enough, they taste like dry paste; but about ten minutes is generally right. I hope 'BETTINE' will succeed, for it is provoking to fail in any cooking.—Yours truly, FLORENCE MILLER."

"**MOLLIE**" says she has "a lot of jet beads, and would like to know how to make a bead-hanging-basket, or anything else that would be pretty." She wants to know, also, what kind of ornaments are made with fish-seals, and how they are made. Who will tell her, how?

JENNIE R. W. wishes I would tell her how to solve diamond puzzles. I know of no better way than to give you a very easy one, and tell you the answer. 1. A consonant (sometimes a vowel). 2. A troublesome animal. 3. Something that every one drinks in some form. 4. A common beverage (much liked by old ladies). 5. A consonant. The central letters, horizontal and perpendicular, name a beverage.—Now you see there are 5 items, so the central words must have 5 letters. Take your slate and mark some little dots on it thus, . . . to show how many words and letters are required. The first item must be W or Y, . . . but as you are not sure, you leave that and try the next; that must be "rat." So put R A T in the place of the first line of three (horizontal) dots. Now you have on your slate: You think the third item may be "water," R A T but you are not sure; so skip that, and go . . . on to the fourth item. You feel sure . . . that that is "tea," so you write it down. . . . Now you are quite sure that the central perpendicular letters should be "water," . . . so you put it down. All you . . . W T E A have to do now, is to fill the . . . R A T horizontal line in the center . . . T E A with the missing letters, and you have your diamond complete. It is a very easy, simple R diamond; but it is very complete, because the perpendicular words are all the same as the horizontal.

One of our Largest Insects.

Several letters from boys and girls concerning one of our largest caterpillars will be here answered in "a

do not wonder that she called the caterpillar, for such it is, by such a hard name, for we know of no other among our insects, that looks so formidable as this. Its portrait, when full-grown, is given in figure 1, though it is sometimes nearly an inch longer than the engraving. A young girl is not to be blamed for calling it a "horrible horned creature," for it really looks as if it meant mischief, though it is quite harmless. This caterpillar is a great feeder, and lives mostly on walnut and hickory trees, though it will eat the persimmon and others, and

leave it until next June, when the moth will probably appear. After severe cold weather is over, it will be well to remove the box to the open air, and cover it with a piece of mosquito netting, or some such material, so that when the moths come out, they may not escape.

About Great Men—Bryant.

When I was a youngster, I had an excellent old friend, an Englishman, who was very fond of pictures, and who

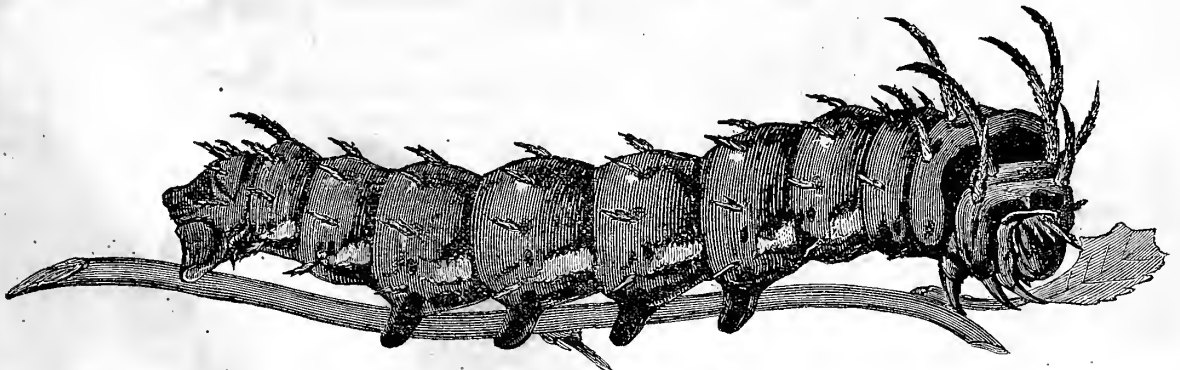


Fig. 1.—THE ROYAL HORNED CATERPILLAR.

when feeding, as with other large caterpillars, its crunching and tearing of the leaves may be distinctly heard. When full-grown, it is of a green color, with a pale-blue band on each ring; the head and legs are orange-colored, as are the long spines, though their tips are black. Probably it is provided with these savage-looking horns, to frighten away the birds, but it can neither sting or prick, and may be safely handled. When it has completed its growth, the caterpillar goes into the ground and forms a chrysalis like figure 2; it remains in this state until the next season, when it comes out in June as a large and beautiful moth, like that in figure 3. This is known as the "Regal Moth," (the larva being the

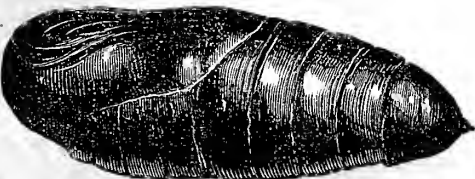


Fig. 2.—CHRYSALIS OF FIGURE 1.

Royal Horned Caterpillar), and is one of the most beautiful of all our moths. Its general color is orange-red, the light spots on the fore-wings being yellow, and there are markings of dark-red and olive color. The name given by entomologists is *Cithæronia regalis*. The insect is never very abundant, but is found here and there all over the country; the first specimen of the moth we ever saw, though we had known the caterpillar, flew into a window of the building when we had our office, many years ago, on Park Row. It had probably perfected itself in City Hall Park, which was directly opposite. If any of you come across this savage-looking caterpillar, do not be afraid of it, even if it does shake itself

had many in the house I loved to visit. Among all his pictures, there were but two portraits—Washington and Wellington (perhaps he would have reversed the order of naming them). I once mentioned this peculiarity, the absence of other portraits, when he said that in his opinion these were the only two men who had ever lived whose portraits he cared to keep, and he added: "G—, I will never hang upon my walls the portrait of any living man."—How many times have I thought of this! A man so long as he lives is capable of doing something which may make us wish to turn his portrait to the wall. When he is dead, his account is closed, and we may then decide whether we wish to keep him in memory by having his portrait constantly before us. It may be a safe rule, that of my English friend, not to hang up the portraits of the living, but fortunately there are exceptions to this. There have been, and there are men—and women, too—whose portraits we may cherish, for the good that they have done, are doing, and are likely to do. We hear of great men, read what they have said, done, or written, and naturally wish to know what kind of men they are—how they look. This is a very natural desire, and a very proper one. I wonder how many school boys there are who have not spoken from their "speakers," or school girls who have not read from their "readers" that noble poem, beginning:

"To him who in the love of nature holds
Communion with her visible forms, she speaks
A various language;"

and ending with:

"By an unfaltering trust, approach thy grave
Like one that draws the drapery of his couch
About him, and lies down to pleasant dreams."

All of you know that this, and other familiar poems, is by Bryant, and naturally would like to know how Bryant looked, and what sort of a man was he, who could write poems that are familiar to young and old.

Nearly 25 years ago, when I first came to live in New York, my residence was in 22d Street. My business was far down-town, but unless it was very stormy, I, for the sake of the exercise, always walked down and up. Almost every spring morning I fell in with an old gentleman, with a long gray beard, flowing gray hair, and a countenance so strongly marked that I knew he must be "somebody." We were both bound down-town—and many a walking race we had. I was fresh from a prairie life, and a lively walker, but this old gentleman was more than a match for me, and often, though not always, out-walked

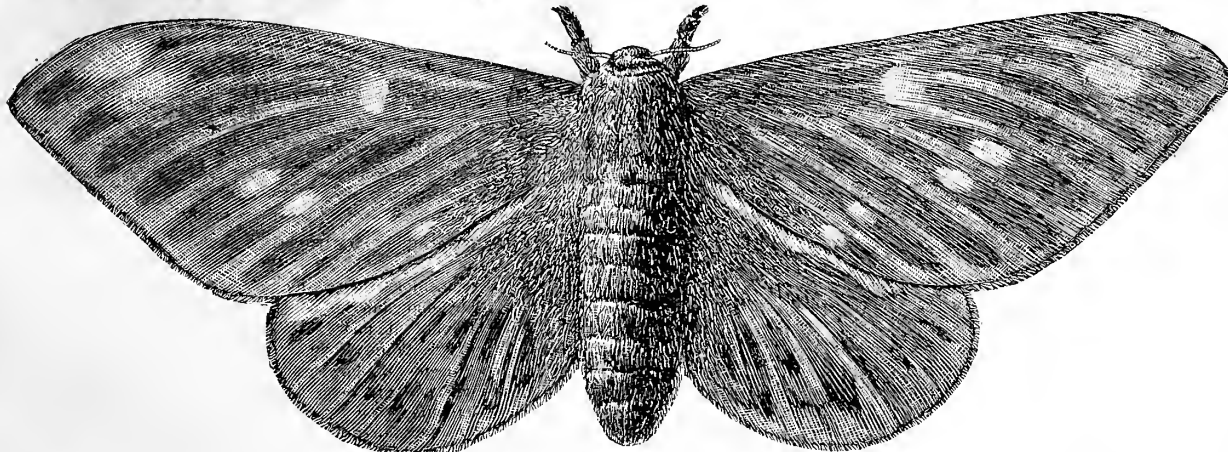
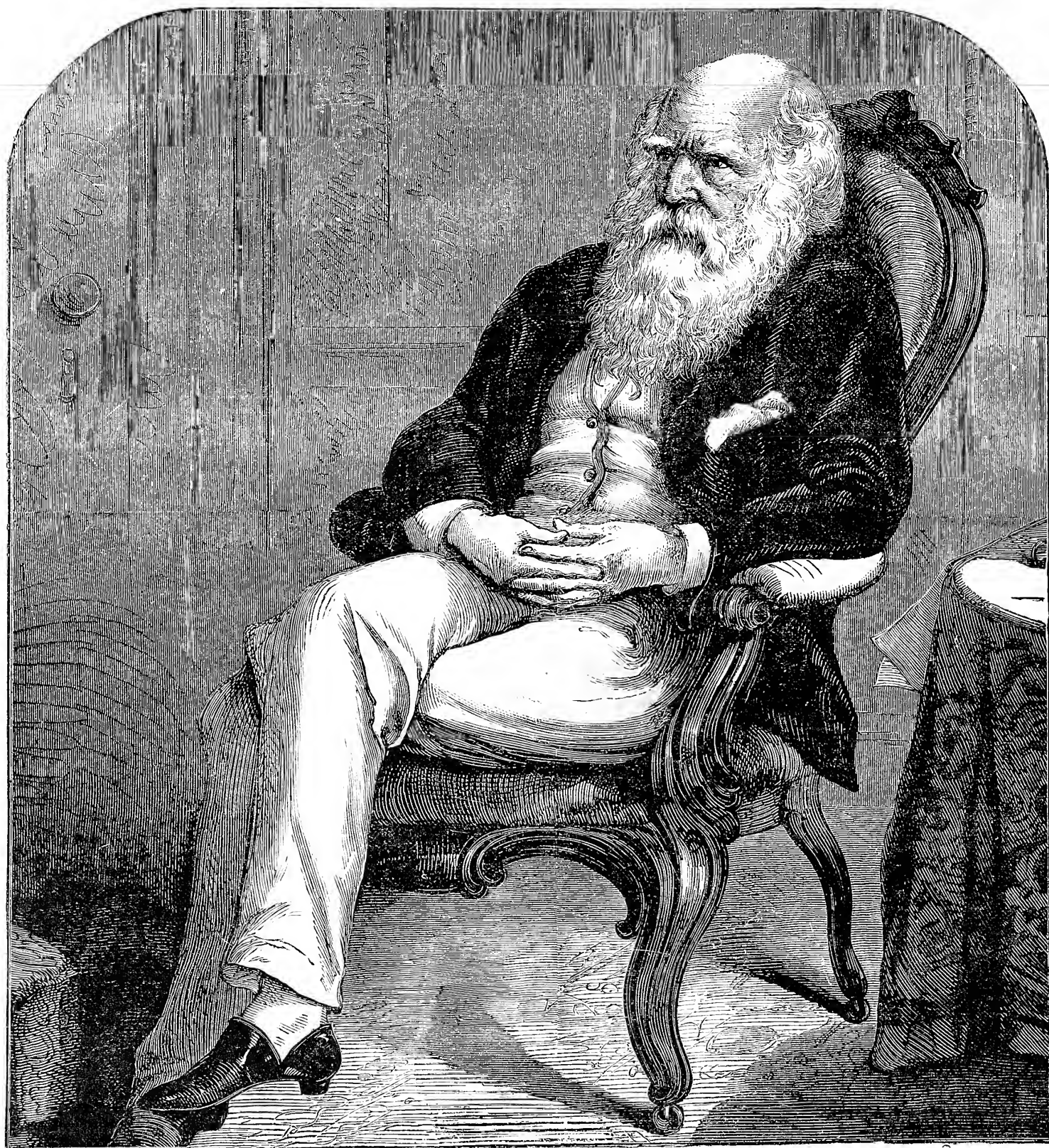


Fig. 1.—THE ROYAL MOTH (PERFECT INSECT OF FIGURE 1).

lump." We can not always reply to such inquiries as soon as they are received, as our engravings are planned well beforehand, and it does but little good to talk about an insect, unless we can give a picture of it, so that all hands may know the particular insect we are describing. Last year, "M. T. A.," of Washtenaw Co., Mich., wished to know about a "horrible horned creature," that was found upon the hickory trees in her neighborhood. We

from side to side; that is the way it protects itself from its enemies—by frightening them. If you wish to raise the perfect insect, provide a box of earth, in which stick leafy stems of the tree on which you find the caterpillar, keeping the earth fairly moist, but not too wet. Give them fresh leaves as needed, and when full grown the caterpillars will usually go into the earth provided for them; then you may put the box away in the cellar, and

me. All this happened without a word ever passing between us, but when we met, which was very often, there was a silent understanding that we were on a walking-match, and this continued until hot weather set in, when the old gentleman disappeared. That fall there was an exhibition of the New York Horticultural Society at which an address was to be given by William Cullen Bryant. I had a good lady friend who was, like myself,



WILLIAM CULLEN BRYANT.—TAKEN AT HIS COUNTRY HOME, AT CUMMINGTON, MASS.

an admirer of Mr. Bryant's poetry, and I invited her to go to the exhibition with me. Of course we both expected a treat, as such a poet, on such an occasion, could not fail to give us something poetical about flowers. We went, and found the room crowded. When the orator appeared—who should it be but the gray-bearded, gray-haired old gentleman with whom I had walked so many races all the spring months! This was a surprise, but when it came to the address, it was more than a surprise; it was a disappointment. We went expecting poetry, and got only pruning! A more matter of fact, and I will say instructive, lecture on pruning—pear-trees—I think it was, could not be given by one who never in his life read—much less wrote—a line of poetry. Some years later I became acquainted with Mr. Bryant, and found that he knew all about potatoes and pumpkins, even if he did write charming poetry about flowers. A number of portraits of Mr. Bryant have been published, most of them taken in profile, and very hard and

rugged. The one here given was drawn by an artist a few years ago, when Mr. Bryant was at his country home in Massachusetts. Mr. B. did not know that he was sitting for his portrait, and to my notion it gives him as he appeared in his home life better than any other. Why do I give you Mr. Bryant's portrait?—For several reasons.—first, because he is a writer of poems with which you are all familiar. Secondly, because he was one of the few men in active political life who never sought for or would accept office. Thirdly, as one who, though a strong writer in political controversy, was always a gentleman, and never used other than gentlemanly language. But these are qualities that will not interest youngsters. My main reason is that though he died at eighty-four, he was always a boy—a boy in activity, and a boy in the freshness of his spirits. He was born among the rocks, the hills, and woods, of Massachusetts, and though the greater part of his life was passed in a great city, and much of his thought was given to public affairs, his

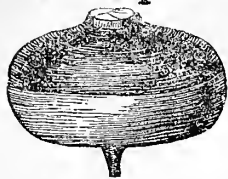
true enjoyment was found among the rural scenes of his boyhood, and he will be remembered by his "Forest Hymn," his poem on "The Fringed Gentian," his lines to "A Water Fowl," his "June," his "Death of the Flowers," by boys and girls in generations to come, who will perhaps never know that he led an active city life and engaged in the political struggles of his day. I have no doubt that he would prefer to be thus remembered. He was a remarkable example of growing old gracefully. He would not have been what he was, he would not have been honored and esteemed as he everywhere was, had he not preserved his simple habits of country life, had he not cherished the memory of his early country home. The lessons of the woods and fields, the memory of the trees and flowers staid with him and kept his mind fresh and his heart pure all through a long and useful life. Every country boy who seeks a city career, may well study the example of William Cullen Bryant in his attachment to his early home.

THE DOCTOR.

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"The Horticultural Exhibition opened in Gilmore's Garden was thoroughly creditable. Mr. Roe was awarded the **GOLD MEDAL** for the best and largest collection of strawberries, and he also received the premium for ten quarts of as many distinct varieties. The second premium for the best ten varieties was also awarded to Mr. Roe."—*New York Times*, June 20th.

I also exhibited my strawberries on the 13th of June, at the Queens County Agricultural Exhibition, and received **1st Premium.** At the Newburgh Bay Horticultural Exhibition my strawberries were awarded the **first premium.** My strawberries have thus received from disinterested judges, most of whom are entire strangers to me, **THIRTY-ONE PREMIUMS** during the season just past.

A NEW FEATURE. Thousands of plants grown in small wooden boxes, and the boxes given away with the plants. One plant thus grown and shipped is worth half a dozen not potted or boxed. I can sell as cheaply as any one, furnishing the same quality of stock. Catalogue free to all applicants.

Address **E. P. ROE, Cornwall-on-the-Hudson, Orange Co., N. Y.**

Sharpless Strawberry.

What Ellwanger & Barry say of it:—"This variety (originating in Catawissa, Pa.) having fruited with us several seasons, we have no hesitation in recommending it as the Largest and Best Strawberry in cultivation. Send for Circular." **F. F. MERCEUR, Catawissa, Pa.**

NEW STRAWBERRY SHARPLESS. The largest, best flavored, and most productive berry ever produced. Berry raised with ordinary culture from plants set in Sept. 12 $\frac{1}{2}$ in. in circumference (weight 2 $\frac{1}{2}$ oz.), and on the same fruit stem four others from the size of a hickory-nut to that of a walnut. See sworn statement and recommendations in my circular, which is free to all sending their name on a postal card. Address **J. L. DILLON, Florist, Bloomsburg, Pa.**

CRESCENT SEEDLING STRAWBERRIES.

Pearlless Crescent Seedling stands without a rival. This is the third successive season this berry has produced fifteen thousand quarts per acre of fruit that readily sells in advance of Wilson. From two cents to eight, and always in demand. Single dozen plants sold in spring of '77, this season, has produced from one to two hundred quarts. In one case twenty-five plants produced four hundred quarts. Always so sure and get the genuine stock, as there are ten thousand spurious in circulation where there is one hundred genuine. **H. B. SMITH, West Haven, Ct.**

50,000 Transplanted Strawberry Plants.

Equal to Potted Plants, at one-fourth the cost; ready after Aug. 1st. Will yield full crop of fine fruit the following spring. Also a large stock of Peach and other Fruit Trees, Small Fruit Plants, &c. at low rates. Send for Circular giving Prices, Particulars, &c. **CHAS. BLACK & BRO., Village Nurseries, Hightstown, N. J.**

STRAWBERRY PLANTS.

For summer and fall setting. All the new and choice varieties, including President Lincoln, 11 inches around, Great American, Forest Rose, Beauty, Pioneer, Duchesse, Crescent Seedling, and many others. Circulars free. **G. H. & J. H. HALE, South Glastonbury, Conn.**

STRAWBERRY PLANTS for Summer and Fall Planting. Crescent Seedling, Cumberland Triumph, Forest Rose, Gt. American, Sharpless, &c. **SAMUEL C. DECOU, Moorestown, Burlington Co., N. J.**

GREAT AMERICAN STRAWBERRY Plants, Potted and G. common runners. Send for Circular, giving best method of culture, to **WM. L. RICHARDS, 22 Brill St., Newark, N. J.**

40 YEARS Among Small Fruits. Send for Catalogue of best varieties. **POMONA NURSERY, Chinnaminson, N. J.**

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"CREAM"
OF THE
STRAWBERRIES

Our Colored Plate, illustrating six of the best Strawberries, together with our method of culture by which a full crop can be obtained in TEN MONTHS from time of planting, mailed free to all applicants.

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Seedsman and Market Gardeners,
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STRAWBERRIES. 6 inches—Largest—Best—Most Hardy and Productive. Plant this Fall and save a year. Great American, Monarch, Essex, Cumberland Triumph, Sharpless, very large, excellent, firm and productive. Greenheart, Pioneer, Cap. Jack, and others—**RASPBERRIES,** 3 inches, yield \$4.33 on 10 Acres. Send for Catalogues.

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STRAWBERRY PLANTS, in Pots, or out of Pots, for Summer or Fall planting. Price List free. **JOHN S. COLLINS, Moorestown, New Jersey.**

E. P. Roe's New Seedling Raspberry PRIDE OF THE HUDSON

More than sustains its high reputation. People come from far and near to see it, and all say it is the finest Raspberry they have ever seen. Send for circular. Address **E. P. ROE, Cornwall-on-the-Hudson, N. Y.**

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Wildor, Saunders, Downing, Musser, Alexander, Amesen, and other varieties, fruited side by side. Price list and circular, giving our experience with the above this season, mailed upon application. **E. M. ENGLE & SON, Marietta, Pa.**

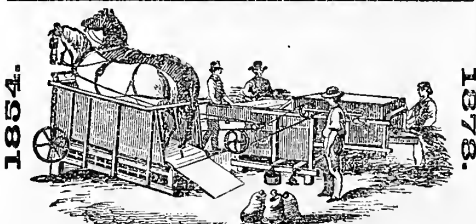
HYNES' SURPRISE.

The Earliest known Freestone Peach. Large, highly colored, very fragrant, a prolific bearer, and a good keeper. *Third year* of fruiting. Ripened in 1877 June 28th—in 1878 June 14th. Best of testimonials if desired. Buds \$2 per doz. Sent safely by mail to any part of the United States. P. O. Order or Registered Letter. **E. F. HYNES, West Plains, Howell Co., Mo.**

Peach and Pear Trees—a large stock. Other trees and plants in full supply. **New Brunswick (Nurseries) N. J. Edwin Allen.**



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The Peerless Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—Grain Fans and Corn Shellers. Our machines are guaranteed to work well, and have received the highest testimonials and cannot be excelled.

E. GILL & SON, Trenton Agricultural Works, Trenton, N. J.

The Hardest and Most Productive Variety of White Winter Wheat.**THE CLAWSON.**

I have a fine crop of over 30 acres of Clawson Wheat. Will clean it carefully for seed, and ship to any address for \$1.50 per bushel. New two bushel bags 25 cts. extra. Sample sent free by mail to all interested in the cultivation of wheat.

Address

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NEW STRAWBERRY. SHARPLESS' SEEDLING.

We shall be prepared to offer plants of this valuable New Strawberry in August. It has fruited upon our grounds during the past three years, and we consider it one of the largest and best Strawberries now in cultivation. Circulars giving description and price of this, as well as of other New and Valuable Strawberries, mailed free. Address

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To Nurserymen, TREE DEALERS AND PLANTERS.

Our Wholesale Catalogue for Autumn 1878, will be ready August 15th and sent FREE to all applicants. **ELLWANGER & BARRY, Mt. Hope Nurseries, ROCHESTER, N. Y.**

A MILLION OF CRESCENT SEEDLING STRAWBERRY PLANTS;

Also **FOREST ROSE, Sharpless,** and all the **Standard Sorts,** in large supply, both **POT-GROWN** and **Layers,** at lowest prices. A Pamphlet on Strawberries FREE. **A. HANCE & SON, Red Bank, N. J.**

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Immense assortment. Unequalled facilities for furnishing Agents and Dealers. Correspond before buying your fall stock. New Catalogue gratis. Address

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In Large Supply CHEAP.

Our stock is exceedingly rich and varied in novelties and choice varieties. **PARKS, CEMETERIES,** those improving private estates, or others buying in quantity and the trade supplied at very low rates. A new descriptive Catalogue, ready Sept. 1st, and will be sent FREE TO ALL. **A. HANCE & SON, Red Bank, N. J.**

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will be ready in February, with a colored plate.—Many new and beautiful Plants are offered for the first time, with a rich collection of Greenhouse and Hot-house plants; Bedding Plants; new and choice Roses; Dahlias. Well grown and at low prices. Free to all my customers, to others 10 cts.—a plain copy free.

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Red Brazilian and White French Varieties, cheapest hog food known. Send for Circular. **E. F. BROCKWAY, Ainsworth, Iowa.** Say you saw this in *Am. Agriculturist*.

Matthews' Garden Seed Drill,

Matthews' Hand Cultivator, Matthews' Drill and Cultivator combined, surpasses all others. Send for circular before you buy. Manufactured only by **EVERETT & SMALL, Boston, Mass.**



Experiments on Wheat and Grass.

A New and Simple Set of Fertilizers, Costing only \$5 per set, Adapted for Testing any Soil for Deficiency in the more Important Elements of Plant Food.

"COMPLETE MANURE SET,"

Designed for Those who Require a Set Requiring the Least Possible Care and Trouble in its Use.

This set consists of only four bags of uniform weight, (50 lbs. each), requiring no mixing or further preparation, to be applied on four alternate strips of Wheat, Grass, or other Crop. May be applied in Drill, Broadcast, or as a Top-dressing by hand or machine.

Bag A, 50 lbs., complete manure, containing the main ingredients in about the same proportion as, but in far more soluble and concentrated form than, stable manure.

The results from these four bags applied in four alternate strips will, during an average good growing season, indicate which one or more of the important ingredients Nitrogen, Phosphoric Acid, and Potash is deficient in the soil for growing the crop experimented upon. Full directions accompany each set. Any ordinary farm-hand can apply them. To each bag is attached a tag giving the number of pounds of each ingredient furnished, and the source from which obtained, with guaranteed composition. Bags A, B, C, and D, will be put up in a large bag as "Complete Manure Set."

Price, per set, delivered to cars or boat at New York, \$5. Price, with plaster omitted, requiring to be redneed in strength by mixing with a divider before use, \$4.50. Five sets (ready mixed), will be sent to one address in one shipment on receipt of \$22.50. The endorsement of this plan of experiments by nearly all the Agricultural Press, Agricultural Colleges, and Stations, as well as by many prominent agriculturists, has encouraged us to extend every facility in our power, including pamphlets and other descriptive matter calculated to insure its success.

Set A, including pamphlet on "Farm Experiments," written by Prof. W. O. Atwater, and blanks furnished as heretofore, at \$1. Any one or more single bags of Set A, and also of the extras (for full description and prices see *American Agriculturist* for April and May, 1878), furnished in connection with Complete Manure Set, at published prices. By combining with the Complete Manure Set either one of Bags I, II., and III., of Set A, the experiments may be adapted to any crop on almost any soil. Address,

THE MAPES FORMULA AND PERUVIAN GUANO CO.,
158 Front Street, N. Y.

Send for quotations of Fertilizers and Circulars. *Muriate of Potash* (\$9 p.e.), furnished by the single ton at \$35 per ton. For Fertilizers for Grain and Grass Crops see advertisement in *American Agriculturist*, July, inside front cover.

PURE GROUND BONE, ALL GRADES, OF OUR OWN MANUFACTURE.

PERUVIAN GUANO.

Imported direct from Peru, by

HOBSON, HURTADO & CO.,

AGENTS OF THE GOVERNMENT OF PERU,

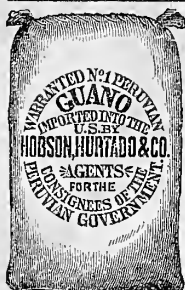
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No. 1 Peruvian Guano—10 p. c. Ammonia Standard.

No. 1 Peruvian Guano—Lobos.

The "Lobos," containing 6 per cent Ammonia, 15@20 per cent Phosphoric Acid, and 3@5 per cent Potassa, is the best and cheapest general Fertilizer in the market, being admirably adapted for Cereals, Corn, Root Crops, Sugar Cane, and Cotton.

Circulars sent free on application.



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DEALERS IN

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Guano

EXCLUSIVELY,
170 Front Street,
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BONE.

Sample free on receipt of address.

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WEEKS' GRAPE & FRUIT PICKER.

An indispensable article for picking choice fruit and flowers. Send for circular.

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J. LLOYD HAICH,

Manufacturer of

Steel and Iron Wire, and Wire Rope

Of Every Description.

Galvanized Wire Clothes-line, Fence and Vineyard Wire, and Fence Staples.

Price Lists with full particulars on application.

Offices No. 81 John St., New York City.
P. O. BOX 2,339.

Galvanized Cable Fence Strand.

The only wire fence that stands the test of time.

P. S. JUSTICE, 14 N. 5th St., Phila., Pa.

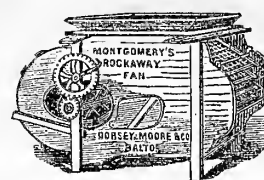
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AMERICAN AGRICULTURIST.

Montgomery's Imp. Rockaway Fan!

210 Premiums.

15 Silver Medals.



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Manufacturers and Dealers in Agricultural Implements.



The only Threshing Machine that received an Award on both Horse-power and Thresher and Cleaner at the Great Centennial Exhibition. For Catalogue and full report of trial, Address MINARD HARDER, Cobleskill, N. Y.

THE SILVER & DEMING Endless Chain Horse Powers,



for one, two, and three horses, are the best made. They have steel track rods, wrought iron links, and for strength and durability are unsurpassed.

Our improved Governor regulates the speed perfectly. We also manufacture Drag and Circular Sawing Machines.

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WITH PATENT LEVEL TREAD

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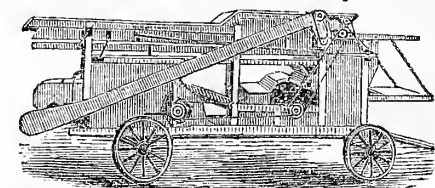
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MANUFACTURERS OF

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Power Corn Shellers and Cleaners.
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Makers of the Original and only Genuine "Vibrator" Threshers. Mounted Horse Powers, Steam Threshing Outfits complete.

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For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Send for Circulars and Judges Report. Pay for itself in a few weeks. D. KAHNWEILER, 120 Centre St., New York.

WHEAT.

A Great Instructive Experiment

will be made this Fall to prove whether or not the lack of BONE

in the soil is the cause of poor yields of Wheat and failure of Grass Crops. The application to wheat and grass of the Pure, Clean, Raw, Odorless, and Fine Ground Bone known as Premium Bone, has so clearly proved that Bone element is the great need, that we believe Farmers should make a wide extended experiment on a great variety of soils throughout the Union.

Out of what is the grain of wheat made? What are the proportion of its elements? What are they?—What is made out of Atmosphere and mineral or soil elements, in the following proportions:

Atmosphere (free to man).....	19,000 parts.
Phosphoric Acid (Bone element deficient in all soils showing exhaustion).....	498 "
Potash (seldom deficient except on soils under culture for a long period of years).....	237 "
Magnesia (enough in the soil for a long period of years).....	120 "
Soda (common salt element).....	91 "
Lime (in bone in its purest state).....	28 "
Silica (sand).....	16 "
Peroxide of Iron.....	7 "
Sulphuric Acid.....	3 "

20,000 parts.
19 parts of wheat is atmosphere. 1 part of wheat is mineral or soil element. $\frac{1}{2}$ of the mineral elements is Phosphoric Acid. Every ton of Premium Bone contains 560 lbs. Phosphoric Acid. Every bushel of wheat contains 3.5 of lb. of Phosphoric Acid. A ton of Premium Bone contains enough Phosphoric Acid to supply 933 bus. wheat, and a ton of Premium Bone being made from Raw Bones (not steamed or burned) supplies to wheat 100 lbs. Ammonia. Unless land has been cropped a very long time, there is no necessity for supplying anything outside of common manure, except Premium Bone. Farmers, write at once for terms for wheat seeding to

Excelsior Fertilizer Works,

SALEM, OHIO.

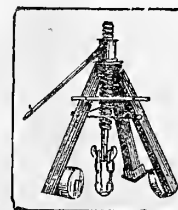
RUE'S PATENT POTATO DIGGER.



Digs IRISH OR SWEET POTATOES

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MAJ. GEO. W. RUE,
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Send for Circular.

The Chamberlin Screw Stamp Machine.



after 10 years test, has proved its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of \$1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Ditching Plows. For Particulars, Prices, etc., address THE CHAMBERLIN MFG CO., Olean, N. Y.

ADAMS' PATENT SELF-FEEDING POWER CORN SHELLERS.

Strong, reliable, thorough in all parts of their work, (shelling, separating, cleaning, and elevating). Perfect self-feeders, and best machines for mill and warehouse purposes, as well as for farm and plantation. Their superiority attested by twenty years use in the heavy corn-growing sections, during which time they have received first premium at all State and World's Fairs wherever exhibited.

MADE BY THE

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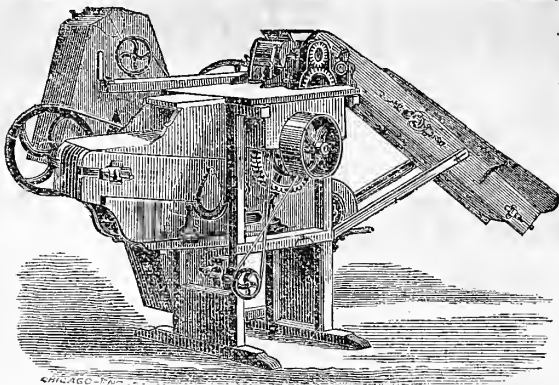
Sandwich, DeKalb Co., Ill.,

Who are also makers of

The Best Hand Corn Shellers in the Market.

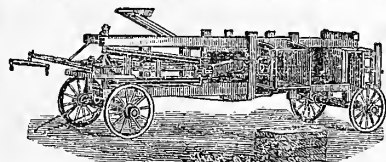
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These Machines will be on exhibition at leading State Fairs East and West.



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Strictly Portable

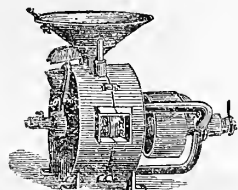


Power and Press in One.

THE ERTEL ECONOMY ONE HORSE Hay, Straw and Moss Press—the World's Favorite—is the most durable, the handsomest working, the easiest in draught, the lightest in weight, and lowest in price; 10 tons of its Hay will load in any railroad box car. These Presses are daily sold, REGARDLESS OF JEALOUSY shown by Eastern monopolies. The Title of this Press is guaranteed to all. Above is warranted or no sale. Address,

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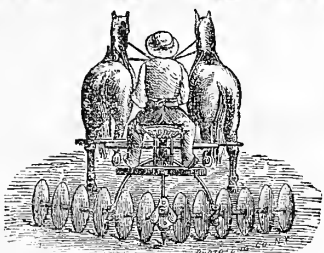
New Standard Flouring Mill. New Standard Corn Mill. Capacity of 12-inch Mill, 2 to 12 bus. per hour; capacity of Light 20-inch Mill, 6 to 40 bus. per hour.

Wholesale Bread, Fine Flour, High Speed, Quick Work, and Economical Milling Fully Established. For illustrated catalogue, describing the Harrison System, Address, the Estate of

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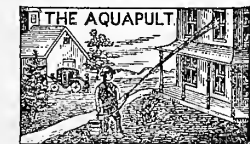
La Dows Jointed Pulverizing & Smoothing DISC HARROW.

Light, Simple,



Durable & Flexible.

Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by **WHEELER & MELICK CO.,** Albany, N. Y., for the United States, except New England. EVERETT & SMALL, Boston, Mass., Manufacturers for the New England States.



THE AQUAPULT, a new and greatly improved Fire-Extinguisher, Garden Engine, Window and Carriage Washer, Tree, Vine, and Shrub Protector from Insects, etc., for starting Aqueducts, and various uses which readily suggest themselves. No Dwelling, Factory, Railroad Station or Wooden Railroad Bridge or Warehouse, should be without one of these valuable articles. Weight, with hose, 5 lbs., throws water 60 feet. Price, \$2.00 each, sent by express, C.O.D. Manufactured by W. & B. DOUGLAS, Middletown, Ct., the oldest and most extensive manufacturers of Pumps in the world. Branch Warehouses, 85 and 87 John St., New York; 191 Lake St., Chicago, Ill.



GARDEN ENGINE AND FIRE EXTINGUISHER—Protects Buildings from Fire, and Trees, Vines, etc., from Insects. Throws water 50 ft. Easily carried. No Dwelling, Country Home, or Factory should be without the Fountain Pump. Send for large illustrated Circular. J. A. WHITE MAN, Sole Proprietor and Manufacturer, Providence, R. I.

W. S. BLUNT'S UNIVERSAL FORCE PUMPS.

Secured by letters patent.

These pumps have enormous power, and are for the house or for out-door wells of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from 1 ft to force pumps, and the air chamber can be removed, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP.** Also, Blunt's Sand Vacuum Chambers. A complete protection against sand or gritty water in dug or driven wells, pits, mines, and rivers. For hand or steam pumps, all sizes, from 1 1/2-inch to 4-inch suction pipe.

Send for circulars to **NASON MFG CO.,** 71 Fulton and 71 Beekman St., New York.

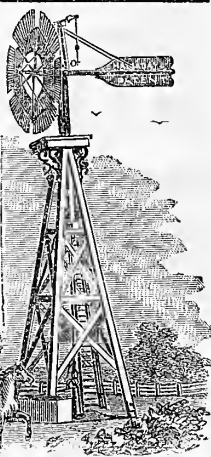
Western Agency, Chas. W. Newton, 150 Lake St., Chicago.

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HALLADAY STANDARD.

The only wind-mill awarded **TWO MEDALS** and **TWO DIPLOMAS** by the **CENTENNIAL JUDGES.**

Every machine warranted to be well made of good material; to do good work in any kind of wind; to be perfectly self-regulating; to possess more power, and to be more reliable than any other wind-mill made. Each piece is fitted and numbered, so that a stranger can put the mill up, using our drawings and printed instructions for a guide.



Send for **CATALOGUE "A"** and Price List.

U. S. WIND ENGINE & PUMP CO., BATAVIA, ILL.



WE BUILD THE STRONGEST WIND MILL in the WORLD. (13 SIZES.)

For farm pumping, irrigation, drainage, grinding, and all power purposes, from 1 to 30 horse-power. Circulars free.

ECLIPSE WIND MILL CO., Beloit, Wis.

THE DRIVEN WELL.

Town and County privileges for making **Driven Wells** and selling Licenses under the established **American Driven Well Patent**, leased by the year to responsible parties, by

WM. D. ANDREWS & BRO., NEW YORK.

A. B. GUNNISON, MANUFACTURER OF

Cucumber Wood Pumps

For Wells and Cisterns.

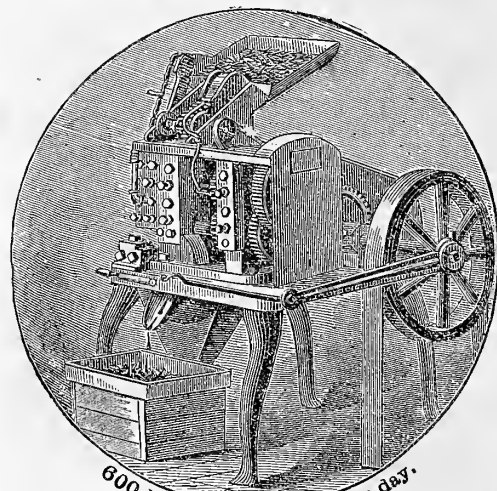
Agents Wanted. Send for Circulars.

ERIE, PA.

THE GLOBE NAIL. THE BEST HORSE SHOE NAIL EVER MADE.

About ten years ago the **GLOBE NAIL COMPANY** of Boston, put on the market the first pointed, polished and finished Horse Shoe Nails ready for driving. Previous to that time all Horse Shoe Nails were pointed, and most of them made, by the shoers in their own shops at the rate of but six pounds per day.

The **Globe Nail** was at once found to be much cheaper and better than any then in use. It soon became so popular that all manufacturers of Horse Shoe Nails were compelled to make their Nails to resemble the **Globe.** For the last ten years it has been the model. Each year the Nail has been greatly improved in quality, and to such a point have we educated the shoers that now they will hardly use a nail unless it is absolutely perfect.



600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

INTERNATIONAL EXHIBITION, 1876. U. S. CENTENNIAL COMMISSION.

[BUREAU OF AWARDS.]

PHILADELPHIA, June 22, 1876.

No. 239, **Globe Nail Co., Boston, Mass.**

Horse Shoe Nails, Pointed, Polished, and Finished. The uniformity in size, smoothness of finish, hardness and tenacity of the iron, closeness of fibre, and excellence of the head and point, the tensile strength of body, and riveting properties of these Nails, unite in making them of the very highest class of manufacture.

Recommended for an Award of Merit. DANIEL STEINMETZ, Phila., Chairman, J. D. TILDEN, Richmond, Va., CHARLES STAPLES, Portland, Me., G. L. REED, Clearfield, Pa., DAV. MCHARDY, Aberdeen, Scotland, T. DIEFENBACH, Germany.

Group Judges XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, Mo., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the **Globe Nail**, circulated by a rival manufacturer over the humble signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals,—horses in particular,—I desire to say a few words in favor of **The Globe Nail.** Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the **Globe Nail** in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say it has no superior in point of **Toughness, Shape, and Finish, if it has any equal.** I have used about fifteen hundred pounds of **Globe Nails** a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If horses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat! I am willing to pay, without any suit, for all horses that are lamed in my shop by using the **Globe Nail.** As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully, (Signed),

P. H. O'NEILL.

Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary.

P. H. O'N.

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

GLOBE NAIL CO.

Three Most Important Works.

Winter Greeneries at Home.

By REV. E. A. JOHNSON, D.D.

FINELY ILLUSTRATED.

12mo.

PRICE, POST-PAID, \$1.00.

This work differs from most other works on winter gardening in giving the results of actual practice. The title Winter Greeneries better expresses the scope of the work than would that of Window Gardening. All can make their rooms cheerful with green, while to successfully cultivate

many flowers requires more skill than the majority of people possess; still flowers are not omitted. A small but judicious selection of easily-procured and easily-managed plants is given, with which to enliven the greenery.

House Plans for Everybody.

By S. B. REED, Architect.

PROFUSELY ILLUSTRATED.

12mo.

PRICE, POST-PAID, \$1.50.

This is a valuable work which meets the wants of persons of moderate means, and we predict that it will prove one of the most popular architectural books ever issued. It gives a wide range of design from a dwelling costing \$250 up to \$8,000, and adapted to farm, village, and town residences. Nearly all of these plans have been tested by practical workings. They provide for heating, ventilation, etc., and give a large share of what are called Modern Improvements.

One feature of the work gives it a value over any similar publications of the kind that we have seen. It gives an estimate of the quantity of every article used in the construction, and the cost of each material at the time the building was erected, or the design made. Even if prices vary from time to time, one can, from these data, ascertain within a few dollars, the probable cost of constructing any one of the buildings here presented.

TALKS ON MANURES.

By JOSEPH HARRIS, M. S.,

Of Morston Farm, Rochester, New York. Author of "Walks and Talks on the Farm," "Talks on Farm Crops," "Harris on the Pig," etc.

12mo. PRICE, POST-PAID, \$1.50.

In the present work Mr. Harris continues the talking style which he has made entirely his own in agricultural teachings. He also continues our acquaintance with the "Deacon," the "Doctor," and the "Squire," and others of his neighbors who have been made, through the medium of these Talks, almost as well known as the author himself. While we have no lack of treatises upon artificial fertilizers, we know of no recent work in which the main stay of the farm—the manure made upon the farm—is treated at all satisfactorily or thoroughly. If this work should do nothing more than convince farmers throughout the country that the value of manure depends upon the quality of the food they feed, rather than upon the kind of animal that eats it, it will accomplish much.

But it does a great deal more than this; starting with the question,

"What Is Manure?"

it runs through in sufficient detail every source of manure on the farm, discussing the methods of making rich manure; the proper keeping and applying it, and especially the

Uses of Manure,

and the effects of different artificial fertilizers, as compared with farm-yard manure, upon different crops. In this the author makes free use of the remarkable series of experiments instituted years ago, and still continued, by Lawes and Gilbert, of Rothamsted, Eng. The

Remarkable Tables

In which the results of these experiments are given, are here for the first time made accessible to the American farmer. In fact, there is scarcely any point relating to fertilizing the soil, including the suitable manures for special crops, that is not treated, and while the teachings are founded upon the most elaborate scientific researches, they are so far divested of the technical language of science as to commend themselves to farmers as "practical" and inhospitable to science as the Deacon himself. The book should have a hearty welcome from every farmer, except the fortunate few who cultivate soils, the natural fertility of which is not yet exhausted.



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 287.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.60 per volume.

Bitter Butter.—"Mrs. C.," Rockland Co., N. Y. The bitterness of the cream and the butter may occur from several causes. The cows may not be in perfectly good health; the feed may be in a condition to produce the flavor, or the weather may have this effect. A pinch of powdered saltpetre added to each pan of milk when it is put away, may prevent the bitter flavor.

Spots in Eggs.—"Barter." It is not unusual to find small reddish globules in Brahma eggs. We do not know the cause, and take no notice of it in our own case. When fowls are preparing to moult, the new feathers appear as small nodules in the skin. This is probably what you have observed in your fowls.

Cow Holding back her Milk.—"E. H.," Atlanta, Ga. When a cow holds back her milk, there is no way to compel her to let it down, unless her attention is attracted elsewhere. By the use of milking tubes we have been able to draw all the milk from a very obstinate cow. Probably from the absence of the usual handling she did not suspect she was being milked.

When to Sow Timothy.—"O. M. Y.," Monroe Co., W. Va. Where the winter is mild, it is safe to sow Timothy seed in the fall; where it is cold, there is danger of unfavorable exposure. Fall sowing is preferable to spring sowing, as the risks of the spring and summer are the greater. Yet spring sowing is very successful when the weather is favorable. When grass seed is sown alone, we would choose the spring rather than the fall. It is rarely that a good catch is missed when the ground is newly plowed, and the seed thoroughly well harrowed into the mellow soil in the spring. The earlier grass, or clover seed, is sown in the spring, the better.

Clogging of a Water-Pipe.—"J. L. M.," Wash'n Co., Pa. If it is possible to avoid spilling milk in the milk trough, it would be the best way to prevent the clogging of the pipe which carries off the waste. If this can not be avoided, we would suggest that the "fountain force pumps," made by Whitman, of Providence, R. I., be procured and used once a week for a few minutes to force water through the pipe in a rapid stream, by which sediment would be washed through. This force pump is very useful for clearing drain pipes of all kinds.

Value of Poultry in the United States.—"Subscriber," Attleboro, Mass. The statement that the value of the annual product of poultry in this country is greater than that of hay, corn, cotton, or wheat, is absurd. Any person who has a moderate acquaintance with what is going on about him, can make a pretty near estimate of the value of the poultry product. For instance, there are four million families in the country, and many of these do not keep fowls. Few persons produce over \$20 worth of eggs and poultry in a year; and if the average product were taken at \$20 for each family, the utmost total value of the yearly income from poultry would be only \$40,000,000.

Feeding Roots.—"G. H.," Schoharie Co., N. Y. Roots are fed either sliced or pulped. Machines are made for cutting large quantities. Smaller quantities may be chopped with a sharp spade, in a box.

Hemlock Boards for Granaries.—"F. H.," Bangor, Kans. It is held that hemlock boards are the best for granaries, because the timber is so full of splinters, that rats find difficulty in gnawing through it. A double-boarded floor is better than a single plank floor, because the joints are broken, and mice and rats, in gnawing through a joint of a double-boarded floor, are obliged to stop half way, when they could go right on through a plank.

Any of these three books will be sent post-paid on receipt of the price.

Orders from the trade will be supplied in succession as received.

ORANGE JUDD COMPANY, 245 Broadway, New York.

Keeping Unhusked Corn.—"T. K.," St. Jo., Mo. When corn is cribbed with the husks on, the husks gather dampness in wet weather, and if the corn is not perfectly dry when cribbed, it moulds. It is better to husk the corn before it is cribbed.

Preparation of Bones.—"C. A. J.," Davidson College, N. C. Making superphosphate of bones by using sulphuric acid, is only dangerous as a sharp axe is; care in handling is all that is necessary for safety. Bones can be reduced to plant-food more readily, however, by composting them with stable manure, or with muck. Even large whole bones will be reduced to a fine powder, and their constituent parts become plant-food, after six months in a properly prepared compost.

To Mend Iron Pipes Burst by Frost.—"D. & C.," Willowdale, Col. A burst pipe may be repaired by wrapping it very tightly with a strip of tarred canvass, or covering the injured part with a piece of sheet rubber, and then wrapping it firmly with copper wire or tarred cord.

Potato-Bugs Made Useful.—Aunt Sue passes her summer months on an island in Long Island Sound, where she follows fishing, shooting, and other out-door exercises that many women might, but do not. We let her tell her experience in her own way: "I have found a use for potato-bugs: Eureka! The other day a young lady said to me, 'Aunt Sue, let's go for black-fish.' 'Come along,' said I—'but have you got any fiddlers for bait?' 'Yes—a few.'—On our way, to the boat, we passed a potato-patch; and, of course, there sat the potato-bug. Said I, 'Fannie, I'm going to try some of these potato-bugs for bait.' 'Oh! do you believe the fish will touch the vile things?' 'We can but try.'—I fished with two hooks—baited one with a fiddler, the other with a P. B.—Up came a big flounder, 'Fannie! he chose the potato-bug!'—'No!'—'Yes!'—'...A glorious pull!'—Up came a big black-fish, and he elected the P. B. 'Tell the *American Agriculturist*,' said Fannie, 'I will,' I replied.—Hence these lines (these fish-lines).—Yours exultantly, AUNT SUE."

Fine Bone or Superphosphate.—"H. W.," Lime Mountain, Pa. If the fine bone-flour is used, there is no need to add sulphuric acid, the plant-food of the bone being sufficiently available without reduction by the acid, for light soils. And composting with stable manure for 3 months, will fit it for any land.

How to Accustom Colts to the Halter.—A correspondent from Delaware gives the following directions for breaking colts to the halter: Put a head-halter on the colt. Never halter it around the neck, because when frightened it is apt to pull the neck out of place, which has happened in many instances. Secure the halter to the manger; allow no more length of halter than will permit the colt to lie down, lest it should become entangled. Halter it about half an hour in the daytime; increase the time upon second and third days, then let it remain haltered all night; go and see it a few times before retiring. By this method I accustomed one to the halter at six months old with success.

Removal of a Ram's Horn.—"P. F. L.," Tuolumne Co., Cal. If the horn is about to destroy the ram's eye, the end of it must certainly be removed. If cut off with a fine saw 2 or 3 inches from the head, it is probable that the ram will suffer no injury nor any inconvenience. If the horn should be hollow there, a horn plug should be inserted, cut off level, and the end touched with a hot iron, which will fasten the plug in its place securely to the horn.

Old Pasture—Irrregularity in Milk.—"M.," Hamburg, N. J. To renovate the apparently exhausted pasture, you should plow under the "five-finger, running blackberries, smach, etc.," with a strong team. Then sow rye—with which you might use some of the commercial fertilizers—plowing it under just before it would be ripe enough to harvest. Then the land would probably be in good condition to raise any crop by use of manure.—The falling off in quantity of milk, in the morning, twice a week, may be due to the cow's being milked by other parties, or possibly from failure to get water.

Wool-tying Box.—"M. M. C.," Davenport, Iowa. Descriptions and illustrations of wool-tying boxes were given in May, 1872, and June, 1877.

Blue Devils is the popular name for a very handsome weed, of which the botanical name is *Echium vulgare*. It is very abundant in Virginia and the Middle States, and has gradually worked its way northward. In a recent visit to Orange Co., N. Y., we saw several places where it had become well established. It is scarcely less to be dreaded than the Canada Thistle, and we warn all those, upon whose farms it has obtained a

foot-hold, to prevent its spread. Otherwise they will be looking out for new farms, where this pest is not known. "Blue Devils," *Echium vulgare*, "Canada Thistle," *Cirsium arvense*, "Toad-flax," *Linaria vulgare*, and "Horse-Nettle," *Solanum Carolinense*, are the weeds that are most to be dreaded by farmers of the Northern and Middle States. The farmer or the weed will have possession of the soil. There can be no compromise; it must be a successful fight, or a surrender.

Railroads in the United States.—Interesting and suggestive figures are given in "Poor's Railroad Manual" for 1878. At the close of 1877 there were in operation 74,112 miles—about enough to make three continuous lines around the world. Six years previous, there were only 44,614 miles, an increase of nearly 30,000 miles within the present decade. (We remember riding on one of the first railroads, 20 miles long, consisting of flat strips of iron, like wagon-tire, spiked on the top side of scantling string pieces). What a saving of wagons and horse-flesh, these 74,112 miles of railway effect!... The cost of these railways is set down at \$4,568,597,248. The total value of the farm lands in the United States, by census of 1870, was \$9,262,803,861. Thus, then, the cost of the railroads would buy half of all the farms in the country. Take away these railroads and the value of the farms would doubtless be diminished fully one-half or more.... Those jealous of the railroads, should note that while the value of farms and the property has been doubled and quadrupled by the railroads, those who have furnished the money to build the roads get a poor return. The profits of running the railroads during 1877 were \$170,976,697. This is only a little over 3½ per cent on the money invested in them. In 13 States the railroads paid no dividends (viz., Col., Fla., Iowa, La., Minn., Miss., Mo., Neb., Oregon, Tex., and Vt.)

New Process Flour.—"A. G. A.," Florence, Mass. A few months ago the so-called new process of grinding wheat was described in the *American Agriculturist* at length. It is simply a double grinding; the first separates the bran, the stones being set as wide apart as possible, and breaks the kernel into coarse fragments. These are sifted from the bran and reground. By this process the second layer of the grain, is all retained in the flour, to the great improvement of its quality. In ordinary grinding, this second shell goes out with the bran as middlings, and is lost to the flour.

Making Cheese.—"Young Housekeeper," Harrington, Conn. In the *American Agriculturist* for Sept., 1875, is an article fully describing two methods of making cheese, with accurate measures of the quantity of rennet to be used, the mode of preparing it, and how to handle the milk for cheeses of particular size.

Bone-Ash, Bone-Black, or Bone.—"R. R.," Baltimore Co., Md. Bone-ash has no organic matter, but often contains as high as 40 per cent of phosphoric acid. Bone-black contains no nitrogen, but has about 30 per cent of phosphoric acid. Of the two, bone-ash evidently possesses the highest value; either, to be of much use, should be treated with acid, or better for the farmer, composted with stable-manure or muck for three to six months. Pure bone contains from 2 to 4 per cent of nitrogen, and about 20 per cent of phosphoric acid. This is perhaps the best form of the three for farm use, on account of the nitrogen, and because it is readily decomposed in a light soil, or in a compost heap.

Value of Gas Lime.—"A. J. H.," Crawford Co., Pa. Gas lime, when fresh, is positively injurious to vegetation. After exposure to the air for a time, it is useful as a fertilizer, but bears no comparison with barnyard manure in this respect. After gas lime has remained exposed for a year, 50 bushels to the acre may be used upon heavy land prepared for fall grain and grass, or for corn.

Drainage of a Springy Meadow.—"P.," Ridgway, Iowa. A ditch, as a matter of course, should have its size fixed with reference to the quantity of water to be carried off. It is better to make it too large than too small. Its depth will depend upon the lay of the land, the fall required, etc. A width of 4 feet may be necessary in soft soil, the sides to slope to 2 feet wide at the bottom. With a good fall this would carry off a large quantity of water flowing only one inch deep. In throwing out the earth, it is best to have it all on one side of the ditch, as it can then be removed easily, and if the ditch needs widening there will be no earth to move twice.

Butter Factories.—"D. McN.," New Brunswick. A butter factory for 100 cows could not be carried on so profitably as one for 600. The cost of the ground, building, churns, labor, fuel, water, and many other things for the small factory, would be equal, or nearly so, as those for the larger one, while the returns would be but one-sixth. Still, where the number of cows

is limited, it will pay better to churn for 100 in one factory than in 10 or 12 farm houses. Plans and estimates for creameries would, perhaps, be furnished for a reasonable compensation by O. S. Bliss, Secretary of Vermont Dairywomen's Association, Georgia, Vt.

Typhoid Pneumonia.—"P. K. S.," Durham, Me. The symptoms which occur in a case of this disease are a changeable pulse, eyes dull and prominent, cold horns, excrement dark, bowels sometimes constipated, and at other times loose; loss of appetite, dullness and disinclination to move, and a dry, hot muzzle. When opened after death the lungs are found dark in color, and the stomach and intestines are dark-green, or lead-color, with the skin or membranes so nearly decomposed as to loosen and become detached at a slight touch. This disease is very virulent and difficult of cure.

Pruning Evergreen Hedges.—"S. G. H.," It all depends upon the condition of the hedge. If the hedge is young, and it is desired to promote its growth, a trimming of superfluous shoots in October will be all that is needed. On the other hand, if the hedge is well established, and it is necessary to check its luxuriance, new shoots may be cut back early in June, in addition to the October pruning to preserve the proper shape.

Fourteen Thousand New Books. written by Ten Thousand different Authors, are reported to have been published in Germany during 1877, of which 2,400,000 copies were printed, or an average of only 171 copies of each new book, and only one copy of the whole number for each 20 inhabitants. Statistics show that only one out of each 50 of the people bought one of these new books. About half of the 2,400,000 copies printed were sold outside of Germany. On an average, then, these German Authors had only 86 readers among their countrymen. There were, however, some six million Almanacs printed, and these are usually larger than with us.

The "White Grub" and Strawberries.—Here comes a most pitiful letter from Pietou, Nova Scotia, to the effect that if the ravages of the "Grub" can not be stayed, they must give up the culture of the strawberry. It is the same sad story that we get every year from various quarters. "The first intimation that we have of the mischief is by the plant suddenly wilting, and if taken up at once he (the grub) is found at the roots." Then, of course, follows a request for a remedy. Our White Grub is the counterpart of the *Hanneton*, such a pest to cultivation in France, and for the destruction of which the Government some years offered a prize, which has not yet been awarded. Our "White Grub" is the larval state of the common "May Beetle" (*Lechnosterna fuscata*), which bounces about our rooms in the evenings of May and June. The grubs are usually three years in the ground before they come out in the perfect or beetle form, and it is probable that most of their mischief is done in their last year, when they destroy everything that comes in their way—even nursery trees as large as one's finger. They have many natural enemies, but enough survive these to make them in some places a calamity. All that our Pietou friend can do is, when a strawberry plant wilts, dig for and find the grub, and prevent that one from further mischief or increase. When the perfect insects, or May-bugs, are abundant, they generally collect on fruit or other trees, from which they may be shaken in early morning, caught on cloths, and destroyed. If the grubs are found abundant in the soil in plowing or spading, it will pay to employ children to pick them up as they are exposed by turning the soil. Thus far, these mechanical means are the only ones known for the reduction of this most serious pest.

Protection for Trace-chains.—"T. P. B.," Evansville, Ind., describes a little "Yankee notion" that is used "out West" to keep the trace-chains from rubbing the shoulders, sides, and legs of horses when plowing, harrowing, or to the wagon.—"We get worn-out gun-hose; about 1-inch hose is the proper size to take in a trace-chain. It costs nothing, as our city friends are always glad to get rid of leaky hose. We cut this hose in pieces to fit; one from the hame to the back-band, another piece from the back-band to within a foot of the single-tree, taking four pieces to rig each horse. It works like a charm. The horse will not have a hair amiss if worked with chains thus enclosed."

His Compost Heap.—A correspondent in Ontario refers to the article in June last headed "A Warning to Every Housekeeper," which refers to the common neglect of privies, and asks if he is to apprehend danger from his compost heap, in which he prepares manure for his garden. The use of dry earth, as suggested in that article, will prove equally efficacious with the compost heap. If, after turning the heap, the surface is covered with a few inches of dry earth—sufficient to prevent the escape of unpleasant odors—we do not think that any gases will arise from it detrimental to the health of his household.

When a Cow Comes in Season.—"J. F. H.," Louisville, Mo. As milk is a more valuable product than the calf, the object should be to make the season of milking as long as possible. A cow will generally come into breeding condition in three months after calving, or, if well fed, sometimes in two months. By keeping the cow from breeding for three months we have about ten months of milking, and can give the cow two months rest. In general, this plan is the most desirable.

Cotswold Sheep and Angora Goats.—"R. D.," Pittsburg, Pa. It is a mistake that some people make to suppose that the Orange Judd Co., or the editors of the *American Agriculturist*, deal in, or sell seeds or live stock of any kind. No persons officially connected with the *American Agriculturist* has anything to sell excepting their own farm produce in the ordinary way in the markets. The advertising columns of this Journal contain in the course of a year the names of persons from whom almost anything can be purchased—from a copper-toed shoe or a watch-key up to steam-engines, farms, live-stock of all kinds, and other things large and small, too numerous to mention.

Hard Lump in a Teat.—"E. C. W.," Montcalm Co., Mich. To treat a hard swelling at the base of a cow's teat, apply twice a day about a teaspoonful of a mixture of Glycerine, 7 parts; Iodide of Potassium, 1 part. If the iodide does not readily dissolve, add a little water to the mixture. A small quantity of this should be poured into the palm of the hand, and rubbed about the swollen part, using gentle pressure and kneading.

Salt for Animals.—"H. M. J.," Milwaukee, Wis. It is better to give horses, sheep, and cows, a daily allowance of salt, by placing a supply where they can themselves procure what they want. Otherwise they may be supplied once a week on a certain day and at a regular hour. Saturday evening is a good time for this.

Dysentery in Pigs.—"J. B. H.," Mount Holly, N. J. This disease is frequently caused by close confinement in warm weather. When swine are confined in pens, they should be kept clean, cool, and thickly bedded with dry earth. Some green food should be provided daily. To treat the scouring, give a teaspoonful of linseed oil to an old pig, or a tablespoonful to a young one, and repeat the second day. Then give, in some sweet milk, the crushed fragments of a pound of flour boiled dry in a cloth for three hours.

When a Cow's Milk is Good.—"C. P.," Milk is fit for table use the fifth day after calving. Many people do not object to use the first milk, which coagulates readily by heat, as a material for custard.

A New Way to Use Paris Green.—"J. B.," uses this pest poison, by mixing two ounces of Paris Green with a half pint of flour in just water enough to wet the mass; then he fills the pail with water, thoroughly stirs it, and says the mixed flour and green stays mixed, and washes from the potato-vines with difficulty. [We should say one ounce to a pail of water.—ED.]

Railroad Conventions are frequently reported here and there. We suggest that a pretty general one might be profitably held "on or along" the Long Island Railroad. Those attending might then learn some of the secrets of the success of the present management; how they contrive to please everybody—almost; to reduce the number of trains, and the expenses, and yet run just the trains everybody seems to want, when and where they are wanted, and as they are wanted. The result is, general satisfaction, and a much larger business than ever before. One of the secrets of success we hinted at some months ago; viz, the managers considered the interests of the road and its patrons, farmers included, as being *mutual*, and they had the necessary skill, experience, and *common sense* to carry out this idea.

Driving Posts by Machinery.—"J. N. M.," To drive posts by means of a small portable pile-driver, can hardly pay. It is too much like using a trip-hammer to crack nuts. The power of one man is sufficient to drive any fence-post, and if a pile-driver is used there must be three men employed, and a horse or two. There would be a loss of at least of one man's labor, without counting the cost of the machinery.

The Medical Register of New York, Connecticut, and New Jersey, William T. White, M. D., Editor, is published under the supervision of the New York Medico-Historical Society. As we have a large number of physicians among our readers, we call their attention to this work as one not only likely to be useful to them, but as an example of what should be done for every State in the Union. This work not only gives the name of every physician in the States mentioned, but the college from which he graduated, the societies of which he is a

member, etc. In New York City we have not only the address of every regular physician, but a directory of streets giving the name of every doctor in each locality. We find the work so full of information of various kinds, that we can commend it to the profession generally.

Plaster Upon Clover.—"C. J. B.," Rensselaer, Ind. Plaster may be usefully applied upon the young clover as soon as the grain is cleared from the field. There is no other time in the life of a plant when a fertilizer can be more usefully given than when it is young and struggling for existence. 100 pounds of plaster per acre is a proper quantity to use. The yield of seed is improved by it as well as the growth of the fodder.

A Georgia Flea Trap.—"The Savannah News" reports the following as from another paper, name not given: A gentleman placed a plate of molasses under a house where the fleas loved to congregate, drove a little stake on each side, and fastened a sheet of writing paper to the stakes, so that it stood vertically (or on its edge) over the plate. The insects, true to their instinct to make for anything white, began to jump against the paper, and to slip down into the molasses. The scheme was a success, and thinned out the marauders rapidly. The plan sounds plausible, and may be worth trying. We can't vouch for the instinctive attraction to white.

Butter Coloring.—"R.," Auburn, Cal. Several preparations for coloring butter have been offered in our advertising columns during the past year. These are probably preparations of *Annatto*, the colored pulp that surrounds the seeds of a South American plant, or *Annattoine*, the coloring principle separated from this pulp. Here is one formula for preparing it: Dissolve one pound of best *potash* and half a pound of *soda* in ten quarts of water, pouring off all the clear solution possible. Put one pound of *Annattoine* in two gallons of water; let it stand in a cool place for two days, with occasional stirring. Mix the two liquids together, stirring occasionally, for two days, then pour off the clear portion and keep in a stone jar, or if in glass bottles, put them in a dark place. At churning stir in a tablespoonful of the liquid to each gallon of cream, using more or less according to the depth of color required.

Conn. Oleomargarine Law.—"The last Connecticut Legislature enacted that: "No person shall offer for sale or have in his possession for sale an article known to commerce as 'Oleomargarine,' being a substance manufactured from suet or tallow and resembling butter, without having the word 'Oleomargarine' plainly stamped or written on the enclosure. All persons guilty of violating the preceding section, shall be fined the sum of fifty dollars for each offence, one-half to him who shall prosecute, and one-half to the town where the offence shall be committed."

Paris Green.—"F. W. M.," Hudson, N. Y. It is no new fact, that when Paris green is brought in contact with a cut or abrasion of the skin, the person may get poisoned. The attention of the readers of the *American Agriculturist* has been frequently called to this, and proper warning given again and again. Paris green is dangerous, as a sharp axe is, and needs to be handled with care; but it should no more be tabooed on this account than the axe.

Yield of a Cross-Bred Cow.—"A correspondent from Cumberland, Md., sends a statement to the effect that a cross-bred Jersey and Shorthorn cow, owned by a resident of Frostburg, in his vicinity, gives a daily yield of 24 quarts of milk, from which 18 pounds of butter has been made in seven days. The cow is five years old, and has been fed on pasture alone.

Kerosene for Hen Lice.—"J. B.," Naugatuck, Ct. While the kerosene will destroy vermin by the thousand, its effects are not lasting, as it soon evaporates. To be effectual it should be applied to the roosts and wood-work frequently, say once a week. The red color of some of the lice is due to the blood sucked by them from the fowls, as mosquitoes become red after dining on human blood.

To get rid of Poultry Vermin.—"L. A. G.," La Salle, N. Y. To cleanse a hen-house or a barn, of lice, you may wash the inside in all infested parts with a strong solution of carbolic acid; then close the building for a day, and afterwards whitewash the interior, repeating the same two or three times a year. With such treatment, and keeping the coops free from droppings, no trouble will be experienced. Lice on laying fowls can be destroyed by the use of carbolic nest eggs.

Cramps in Turkeys.—"G. G.," Greenville, Ill. Your young turkeys, which, when two weeks old, had their "legs all drawn up and toes twisted out of shape," had the cramps or rheumatism, probably caused by close in and in-breeding, or confinement in damp quar-

ters, or from being reared by hens. It is held by some that as a hen always broods in the same place at night, the young turkeys thus take injury, perhaps generate some poison, which results in the disease. On the first appearance of the cramps, bathe the parts in hot mustard water, by letting the chicks stand in it; feed two grains of bromide of potash in soft food daily, and move the brooding coop each day. (A hen turkey left to herself will not brood twice in the same place.) I. K. FELCH.

Chicken Cholera.—"P. S.," Fort Erie. Chickens which have a diarrhoea, voiding sulphur-colored droppings, and mope for a day or two and then die, probably have the cholera. Of the many reported "specifics" for this disease, very few, if any, will effect a cure. To prevent the scourge, feed a tablespoonful of sulphur to 25 fowls, twice a week in their food; and keep crushed charcoal where the poultry can eat it when they like.

Canada Thistle.—"J. L. M.," "J. D.," and others. Cut now, before it goes to seed, and burn—that will prevent further seeding. There is no special application to kill this or any other weed, that will not injure useful plants. Canada Thistle usually appears in a patch, in the field or on the roadside. It is rather late; still, go at it, mow and burn. If it springs up after the mowing, mow again, and do this as often as it starts this season. Next spring, look for it, mow and keep mowing; whenever it is six inches high, cut it. By keeping at it, you can subdue it, but if you have not the needed persistence, it will get the better of you. Where the thistle appears in small patches, we have known it to be subdued by making these the regular places for salting sheep.

Farm Accounts.—"Young Farmer." It is as necessary for a farmer to keep accounts as for any other business man. Not one farmer in a hundred, or perhaps in a thousand, knows how he stands with the world, how much he owes, how much his crops cost him, which of them are profitable, which grown at a loss, how much they yield, or what a proper day's work of a man is. Few can tell how much grain a man can, or should thrash in a day, or decide any such common question; and the majority of old farmers have spent their lives in guessing, or perhaps not even caring to do so much as that. To succeed fully in any undertaking, one must keep accounts. To do this is very easy. Get a small book, and have one page for every crop and every kind of stock. Have another in which every day record all that is done, every purchase, every sale, the quantity of feed used, cost of work done in each field, and the value of each crop. From this book the items are carried to the separate accounts in the other book to which each belongs, and in each account the total at the end of the year will show the charges and credits for each field, for each kind of stock, and for each crop. There is no need to keep these accounts in any complicated way: the more simple and plain they are the better.

Composting Dead Animals.—"T. B. P.," Goldsboro, N. C. The best method of utilizing the carcasses of dead animals is to put them in a compost heap of stable-manure or muck, either whole or cut in pieces. The heap should be wet from time to time to forward the decomposition. There need be no offensive smells if there is sufficient muck, or if the heap, when manure is used, is well covered with earth. In six months at farthest, the carcass will be thoroughly decomposed, and converted into an excellent fertilizer.

Poultry in Stables.—"Reader." It is best to avoid keeping poultry in or near stables, because they are generally neglected, and become infested with vermin, which get upon the cows or horses. But it is only for this reason, and if the fowls are kept clean, there need be no such objection. Poultry houses may be kept perfectly free from vermin by painting or whitewashing the interior, making the floor of cement, and keeping it cleanly swept and sanded at least once a week.

Fine Asparagus.—"The winners of the prizes for Asparagus at the Spring Exhibition at Mueola, Queens County, N. Y. Fair, were Valentine Frost, Locust Valley, and George H. Townsend, Glenhead, both of Long Island. When the exhibition was over, they sent us their exhibits, and though we may have seen larger single bunches, we do not think that we have before seen so much large and really fine asparagus together. Both these prize winners attribute their success to the use of "Mapes' Special Fertilizer for Asparagus," which was the only fertilizer used upon the crop.

James Fleming, well known as a gardener, and later as a seedsman, died on July 10th at New Canaan, Conn., at the age of 45. Mr. F. was a native of Ayrshire, Scotland, and came to this country while quite a young man; he had charge of some of the finest private collections in the country, and in the capacity of gardener, as well as that of seedsman, he made a large circle of friends.

Gold Detecting.—"A. W. R.," Placer Co., Cal., asks, "what acid is used in determining the presence of gold in minerals or soil?"—If gold is in its *native* state, the form in which it is frequently found, the grains will not be brittle, but will flatten if hammered; they will not dissolve in any ordinary acid, but only in a mixture of nitric and muriatic acids. To detect gold when combined with sulphur, iron, etc., requires a process too long to describe here, and altogether too difficult for one not accustomed to such work.

Drained Marsh.—"M. W. J.," Mayfield, Mich. The drained marsh intended for cranberries, but which will not grow either corn or oats, will probably improve after a year or two of cultivation. It may be that the soil contains too much of the injurious peroxide of iron, which frequently occurs under such circumstances, but will be changed to harmless compounds, after continued exposure to the air. An application of lime—say, 25 bushels per acre—might be beneficial. Ashes on such land seldom are of much value. Corn, oats, and rye usually succeed best on land like this for the first few years.

Horses and Cattle Together.—"H. F.," Evansville, Ind. So long as the animals are properly secured, there is no good reason why horses and cattle can not be kept under the same roof, without injury to either.

The Best Agricultural College. is asked for by "L. H. J.," of Wellsboro, Pa., "for a young man who has a good English education, and has had some years' practice on a farm; who is not afraid of work, and wishes to become a *first-class* farmer, or none at all." We can not say which is best, having had experience with only a few. Would recommend the Mass. Agricultural College, Amherst, Mass., or the Michigan Agricultural College, Lansing, Mich., or Maine College, Orono, Me.—these being known to us personally as doing good work as *agricultural* colleges.

Carbolic Acid for Sheep-dip.—"J. W. C.," Bates Co., Mo. We would advise you not to use unprepared carbolic acid for a sheep-dip. It is unsafe for such purpose, as one cannot tell how diluted or concentrated it is, and it may be absorbed by the skin and act as a poison. A good article is "Buchan's Cresylic Sheep-dip," of which carbolic acid is the basis. For some reasons it is preferable to tobacco.

Sheep Scab.—"J. S. McC.," Iola, Kansas. When Sheep pens and pastures are once infected with scab, three years may elapse before the insect and the eggs will perish. But the pens may be freed from the infection by a thorough washing with lime wash, containing carbolic acid at the rate of one hundredth part, mixed with it. The scab disease may be cured by washing the sheep in the preparation referred to in the preceding item. The sheep should be thoroughly soaked; the scabs be broken up and the raw surfaces well washed.

Shorthand.—"L. H. Y.," Yostville, Pa. Any person of ordinary intelligence can learn to write shorthand, but it requires a great deal of practice to become expert. Graham's book is good; some prefer Munson's.

Cutting Cows' Tails.—"A. E. H.," Harmony, Kan. We mean what we say, when we state that it is unnecessary ever to cut off a cow's tail. There is no such disease as tail-ail; nor do we, or any intelligent veterinarians, know of any reason why the tail should ever be cut. "B. V. B.," Monson, Mass., who thinks very highly of the *American Agriculturist*, asks, what to do instead of cutting the tail, to prevent the hair from curling? Well, if one doesn't like the curl, he may cut it off; but we do not see why a cow should not wear one curl, especially as it does no harm.

All We Know.—A subscriber, residing we don't know where, wants us to inform him "all we know about farming, and also the quantity and best ingredients of fertilizers." "W. A. W." does not ask much of the editors in his first request; but they cannot answer the second, unless he tells something of what he knows about what he wants to use the fertilizer for, and where he lives.

The Mole Drain-Plow.—"W. B. E.," Plymouth, Ill. The mole drain and sub-soil plow is effective in stiff clay lands. Upon light soils the opening made by the plow soon caves in and fills up.

Breachiness in Cows.—"G. W. H.," Stony Point, N. Y. We can suggest no plan to keep cows within bounds that are able to creep under bars only 18 inches from the ground. We fear such cows might fly over the stone walls. For the walls, with ordinary cows, it might be useful to plant stakes on each side, to which a rail is fastened with wire. For the bars it might answer to put a lower bar six inches from the ground. A cow that will creep under that is incor-

rigible, or too small to be worth keeping. If they work the bars out, bore holes in the ends and insert pegs.

Potash on Fruit Trees.—The "Gardener's Chronicle" (London, Eng.), quotes a correspondent of an American paper, as to the value of *potash* on trees, and his method of applying it, which is to slice up "a few bars of common soap," and bind the pieces in the branches where the rain will dissolve the soap and carry it down over the bark. This is no doubt excellent practice, but it is very strange that so accurate a paper as the "Chronicle" should regard this as a method of applying *Potash*. It surely knows that hard or bar soap does not contain potash. All hard soaps are soda soaps, but are not on that account the less useful to the tree.

Fruit-Growing in the United States.—The magnitude of the fruit-growing interest is not appreciated by many people. Col. Marshall P. Wilder, Pres. of American Pomological Society, in the last Report of the Society, makes the following estimate: Acres in fruit, including grapes, 4,500,000. Apple and Peach trees each 112,000,000. Pear trees, 28,000,000. Grape-Vines, 141,000,000. Value of annual products: Apples, \$50,400,000; Peaches, \$56,135,500; Pears, \$14,130,000; Strawberries, \$5,000,000; Grapes, \$2,118,900; other fruits, \$10,000,000. Total, over \$138,000,000, equal to half the average value of the entire wheat crop. This would give an average of over \$3 worth of fruit for each man, woman and child in the whole country—or over \$1.00 worth of apples, and the same of peaches.

Houdans and Hedge.—"B. H.," Iowa. The fowls take their name from a town in France. With us it is usually pronounced as if spelled *Hoo-dan*, but the French pronunciation, as well as it can be expressed in print, is *Hoo-dong*, as if it were written *dong*, with the *g* silent or nearly so. A sound which can only be properly learned by hearing it pronounced. . . . Your hedge may be ent in the fall.

Potato Diggers.—"R. D. M.," Wilnot, N. S. To use such an implement, good judgment is required to adapt it to the peculiar circumstances of each case. A man may be a good plowman, and yet require practice to become expert with a potato-digger. If it runs either too deep or too shallow, and will do both, it is certainly possible to make it hit a proper depth. We advise you to try again this season.

P. and P. B.—Petunias and Potato-Bugs. "E. C., an old Subscriber" in Wis., sends us a slip cut from some paper, to the effect that some one's potatoes escaped because "Wild Petunias" (whatever they may be) grew near the patch, and the bugs, being attracted by the Petunias, were poisoned by them. We do not know what is meant by "Wild Petunia," as we have no native species of Petunia, but in gardens the plant is frequently self-sown, and becomes in a measure a weed, and this is probably what is referred to. However, our correspondent states that he, several years ago, found the ground under a Petunia in his wife's flower-bed covered "nearly two inches thick (!) with dead potato-bugs, though said bed was on the outside of the house, and some distance from the potato-patch." He asks, if it would not be well to plant Petunias among the potatoes. Here is something worth following up, that we may learn its value.

Potatoes above Ground.—W. S. Parsons, of Md., sends us a potato vine on which are potatoes in various degrees of development, from fair-looking tubers, of the size of a butternut, down to that of a hazelnut, part tuber, and part branch. Such specimens are not of rare occurrence, when the growth of vines is so luxuriant as to exclude the light from the lower part of the stems. The potato proper, or tuber, is an underground stem, greatly enlarged by the deposition of starch. In cases like the present, the stem, being in the dark, does not develop as it would if exposed to the light, but thickens up, and makes a more or less perfect tuber. We figured a similar instance as long ago as April, 1863.

Blasting Logs.—"Progress" writes that a better way to tamp a hole for blasting a log, than driving in a plug beside the fuse, is to tamp with dry clay, brick-dust, or sand, even. He says the plug will blow out, but the tamping will hold every time.

Plums Do not Bear.—"S. A. D.," Lowell, Mass., writes: "Some Damson plum trees, six years old, are healthy and vigorous, and situated in a garden that is well cultivated. They were loaded with fruit one year; since then they have had none. What can be done to make them bear?" . . . This is one of the many unsatisfactory inquiries that we are asked to answer. The writer thinks that the whole story is told, but he has really told but little. If the trees have bloomed freely, since the "one year" of bearing, but of which nothing

is said, we should look to the *Curellio*, as the probable cause of unproductiveness. The attack of this insect begins as soon as the fruit is set, or is as big as peas. We should look for no other reason for lack of fruit, unless assured by good observers that it was *not* the *curellio*. If so, as likely to be the case, there can be no fruit, unless the *curellio* is daily jarred from the tree, as we have described over and over, and are willing to describe again. If the trees bloomed, the chances are 99 to 100, that the *curellio* was the trouble. If the trees did not flower, then we should look for another cause.

About Bleaching.—"J. H.," Minneapolis. We have so frequently stated that we do not answer anonymous letters, that we infer you are a new subscriber, and not aware of this rule. Had you given your address, we should be able to ask for a more definite question, as it is not possible to answer one so general in terms as yours.

Exhibition of the American Institute.—It is announced that the 47th Exhibition of the American Institute will be opened September 11th; and closed November 16th, 1878.

Department of Agriculture.—The resignation of J. R. Dodge, statistician, is announced just as we go to press. No reasons are given for a step which deprives the Department of an industrious, useful officer.

Natural Sciences at Brown University.—The Corporation of Brown have recently appointed Prof. A. S. Packard, Jr., the well known entomologist, of Salem, Mass., to the new chair of Geology and Zoology.

To Keep a Road horse in Condition. we would say to "A. G.," Hamilton, Ont., requires regular feeding with the best food, good grooming, and a clean, well-ventilated stable. A good course of feeding may be as follows: A three-peck basketful of cut-hay moistened and mixed with three quarts of ground feed, of corn, oats, and wheat-bran, to be given morning and evening. At noon, four quarts of sound, crushed oats. At night, a few pounds of long-hay. With each feed, a tablespoonful of salt should be given. If the animal is rough and hide-bound, give a quart of linseed-meal at each meal, in place of as much ground feed.

Nuts and Nubbins.

The msketo, like charity, begins to hum. Ten hot sun-days, all together—in June 1878. That horse is not much at running fast, but he can stand the fastest of any horse you ever saw. Scientific agriculturists speak of the "fruit belt" of the South. It is where green apples strike the small boy. A little girl yesterday, while watching the rain, turned to her mother, and said: "Ma, I guess the weather's so warm it's melting the clouds."

A cynical old practitioner says, "A lady who practises medicine commits two faults: she increases the number of doctors and diminishes the number of women."

"Your dog, what does he want here?" inquired a dry goods dealer of a customer whose big Newfoundland was upsetting things generally. "Muzzlin," was the answer.

Statistics show that the number of idiots is increasing; and yet some newspapers continue to make war on quack doctors. What's a quack doctor for but to kill off fools?

"When tempted to kick a man," says a Scotch philosopher, "stop and remember that you may some day want a favor of him." Tempted men generally stop to see if the other fellow is the biggest.

A boy of four will ask questions which the man of forty can't answer. Even Darwin's children can puzzle their father if they will only say to him: "Where that first hen came from, is what I want to know."

"Vat a monster language," said a Frenchman; "here I read in ze newspaper zat a man commit a murder, was committed for trial, and zen committed himself to a reportair. No wonder everyzing in America is done by committee."

On the Fourth a native American was upbraiding a naturalized German for celebrating the day so enthusiastically. The German replied: "You, sir, are an American from necessity; I am one from choice. And beside, sir, when you came into the country, you hadn't a stitch of clothing to your back, while I was comfortably clad." The American has been thinking about it ever since.

Work on the Boston Post-office extension is progressing slowly but surely. Four masons squinted over a block of stone yesterday for three hours to decide if it was level, and then went to dinner. A couple of men who spent the principal part of the afternoon in getting in and out of their overalls, got as far as spitting on their hands before it was time to "knock off." They will lift a couple of planks early in the week.—*Boston Paper*.

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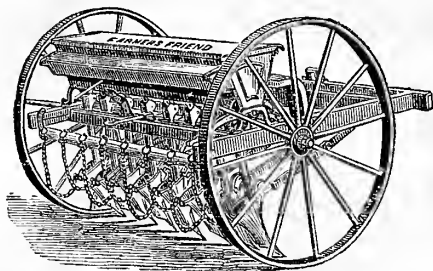
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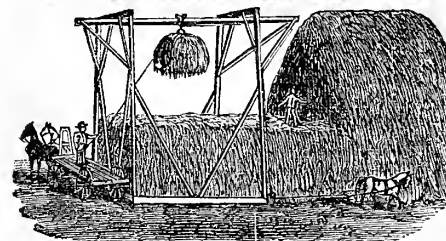


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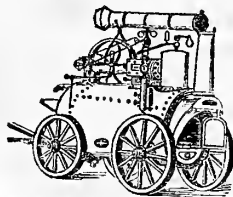
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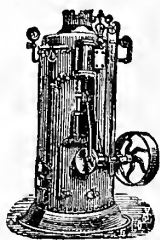
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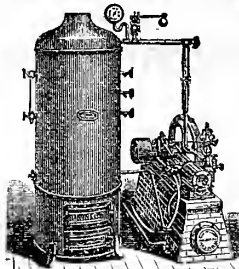
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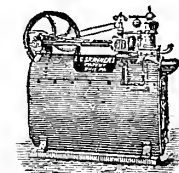


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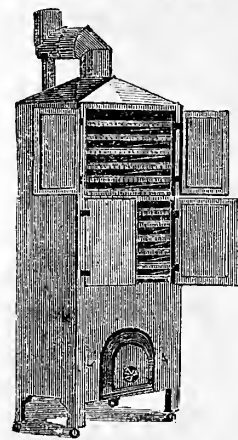
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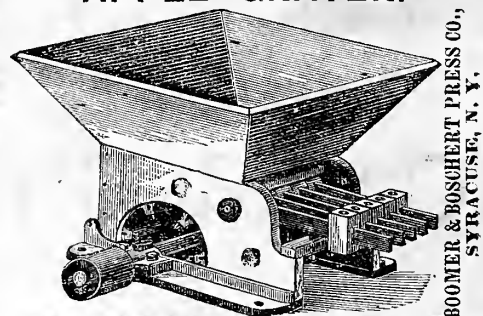
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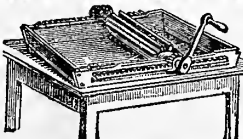
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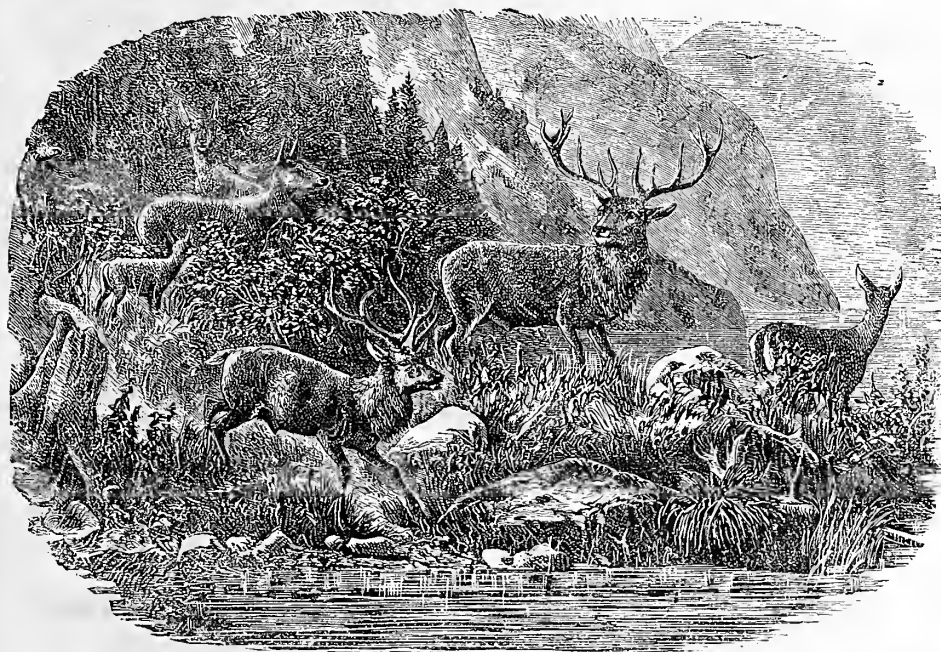


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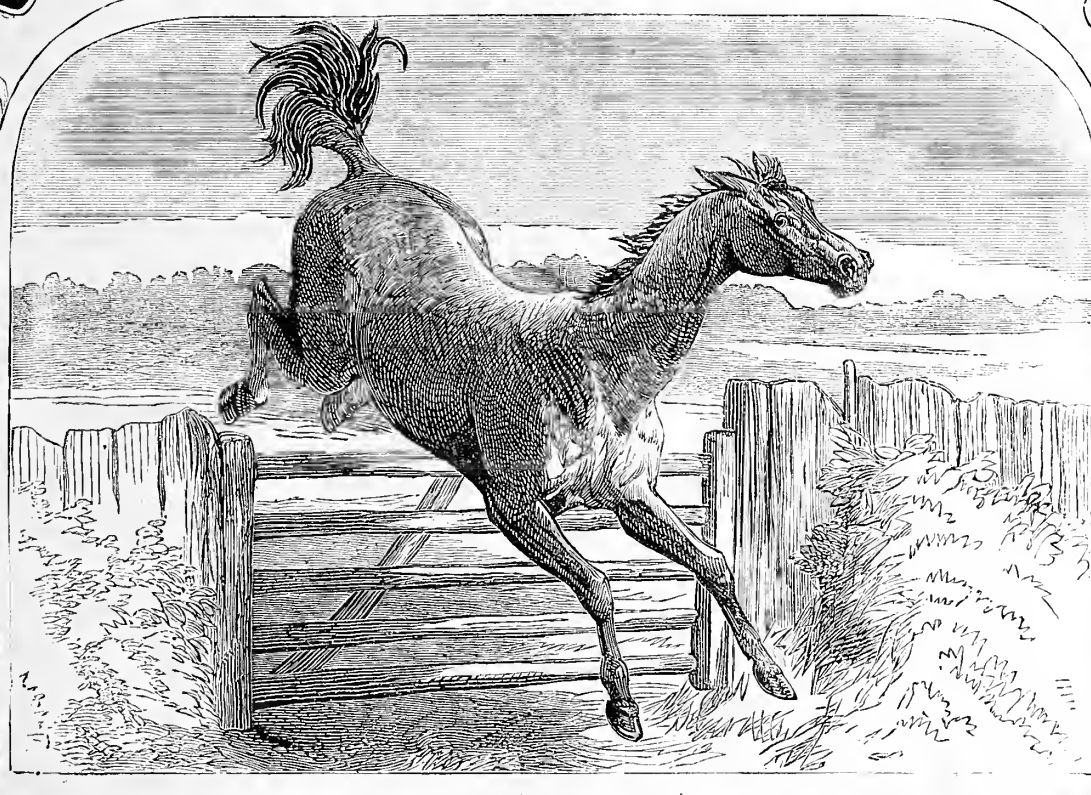
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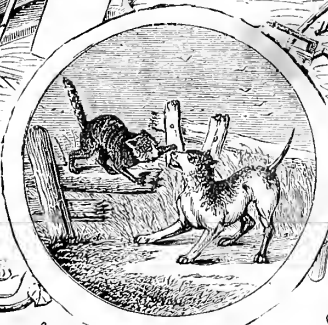
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VOL. XXXVII.

NUMBER 9.

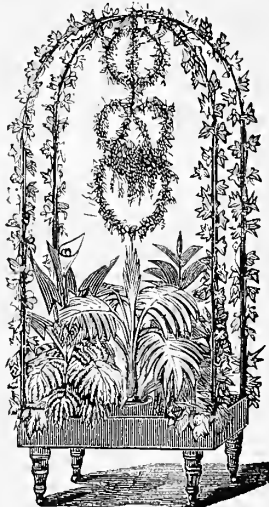
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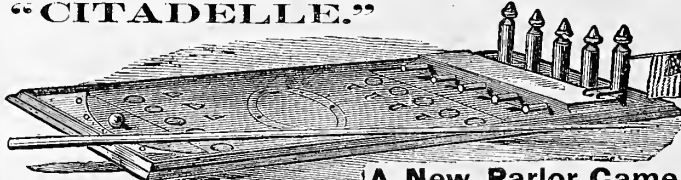
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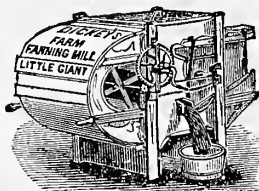
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VOLUME XXXVII.—No. 9.

NEW YORK, SEPTEMBER, 1878.

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Calendar for the Month.

Day of Month.	Day of Week.	Boston, N. Eng.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, Iowa, and Cal- ifornia.		
		Sun. rises.	Sun. sets.	Mon. sets.	Sun. rises.	Sun. sets.	Mon. sets.	Sun. rises.	Sun. sets.	Mon. sets.
1	S	5:25	6:35	8:33	5:27	6:33	8:44	5:29	6:31	8:50
2	M	5:26	6:33	9:19	5:28	6:31	9:26	5:30	6:29	9:33
3	T	5:27	6:31	10:8	5:29	6:30	10:15	5:31	6:28	10:23
4	W	5:28	6:30	11:5	5:30	6:28	11:13	5:32	6:26	11:20
5	T	5:29	6:28	morn	5:31	6:26	morn	5:33	6:25	morn
6	F	5:30	6:26	0:9	5:32	6:25	0:16	5:34	6:23	0:23
7	S	5:31	6:24	1:15	5:33	6:23	1:21	5:35	6:22	1:27
8	M	5:32	6:23	2:22	5:34	6:21	2:27	5:36	6:20	2:32
9	T	5:33	6:21	3:27	5:35	6:20	3:31	5:36	6:18	3:36
10	W	5:35	6:19	4:30	5:36	6:18	4:33	5:37	6:17	4:35
11	T	5:36	6:17	rises	5:37	6:16	rises	5:38	6:15	rises
12	F	5:37	6:16	6:22	5:38	6:15	6:24	5:39	6:14	6:25
13	S	5:38	6:14	6:42	5:39	6:13	6:45	5:40	6:12	6:47
14	M	5:39	6:12	7:3	5:40	6:11	7:7	5:41	6:11	7:11
15	T	5:40	6:10	7:29	5:41	6:10	7:34	5:42	6:9	7:39
16	W	5:41	6:8	8:0	5:42	6:8	8:6	5:43	6:7	8:12
17	T	5:42	6:7	8:37	5:43	6:6	8:44	5:44	6:6	8:51
18	F	5:43	6:5	9:21	5:44	6:4	9:32	5:45	6:4	9:39
19	S	5:44	6:3	10:22	5:45	6:3	10:29	5:46	6:2	10:36
20	M	5:45	6:1	11:27	5:46	6:1	11:34	5:46	6:1	11:45
21	T	5:46	6:0	morn	5:47	5:59	morn	5:47	5:59	morn
22	W	5:47	5:58	0:40	5:48	5:58	0:45	5:48	5:58	0:51
23	T	5:49	5:56	1:56	5:49	5:56	2:0	5:49	5:56	2:5
24	F	5:50	5:54	3:14	5:50	5:54	3:17	5:50	5:54	3:30
25	S	5:51	5:53	4:33	5:51	5:53	4:34	5:51	5:53	4:35
26	M	5:52	5:51	sets	5:52	5:51	sets	5:52	5:51	sets
27	T	5:53	5:49	6:3	5:53	5:49	6:6	5:53	5:50	6:10
28	W	5:54	5:47	6:35	5:54	5:48	6:40	5:54	5:48	6:45
29	T	5:55	5:45	7:14	5:55	5:46	7:20	5:54	5:46	7:27
30	F	5:56	5:44	8:1	5:56	5:44	8:9	5:55	5:45	8:16

PHASES OF THE MOON.

MOON.	1st Quart.	Full M'n.	3d Quart.	New M'n.	1st Quart.	Full M'n.	3d Quart.	New M'n.	1st Quart.	Full M'n.	3d Quart.	New M'n.
1st Quart.	3:42 ev.	3:30 ev.	3:18 ev.	3:6 ev.	2:36 ev.	2:24 ev.	2:12 ev.	2:0 ev.	1:48 ev.	1:36 ev.	1:24 ev.	1:12 ev.
Full M'n.	11:11 m.	10:53 m.	10:41 m.	10:29 m.	9:59 m.	9:47 m.	9:35 m.	9:23 m.	9:11 m.	8:59 m.	8:47 m.	8:35 m.
3d Quart.	19:14 ev.	1:31 ev.	1:22 ev.	1:10 ev.	0:40 ev.	0:28 ev.	0:16 ev.	0:04 ev.	23:52 ev.	23:40 ev.	23:28 ev.	23:16 ev.
New M'n.	13:26 m.	9:26 m.	9:14 m.	9:2 m.	8:50 m.	8:38 m.	8:26 m.	8:14 m.	8:02 m.	7:50 m.	7:38 m.	7:26 m.

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Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of new subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price, and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy* information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

Trade With Sandwich Islands.—Mr. J. B. Castle, a resident of Honolulu, referring to Mr. Bellamy's article in the *American Agriculturist* for August, says: The history of the reciprocity treaty, and the statistics of trade between the United States and Hawaiian Islands, show the treaty in a highly favorable light. It is not a mere question of the absolute amount of coin paid into the U. S. Treasury, but a choice between a small inactive trade, and an intimate, prosperous commercial relation between this country and a natural source of supply for the Pacific Coast. The report of the Statistical Bureau at Washington, shows the *increase* alone of our exports to the Sandwich Islands to be nearly equal to the amount annually paid for duties previous to the treaty. Its tendency steadily and strongly turning trade from other countries to this, and assisting our manufacturers to a free competition in supplying the Islands. Could you give the space, it would be easy to show any intelligent and thoughtful inquirer the real *reciprocity* of the treaty. For want of time and space I omit reference to other statements of Mr. Bellamy—but I hope all interested will refer to the statistics and reports of the working of the treaty, published in Washington, April 17, 1878.

Advantages of a Feed-Cutter.—"A. D.," Du Quoin, Ill., writes, that in 1871, he had 30 acres of land, 4 cows, and a pair of mules, for which he found it difficult to provide fodder. For economy, he bought a feed-cutter, and then had plenty of feed and increased his stock. This increased his manure, and that doubled the supply of feed. The stock was again added to, and at present there are 22 head of cattle and horses on the 30 acres, and more feed than can be used. He now has a steam engine attached to a large-sized cutter. His prosperity dates from the day he used a fodder-cutter.

Simple Signals for Rifle Ranges, Farmers, etc.—Since sending page 347 to press, several trials have been made of "talking at a distance," with gratifying results. After a few minutes' practice, a boy at a distance called off the numbers 23, 3, 23; 322; 21, 1, 113, 113; 32, 11; 11, 212, 2, 133; 322; 211, 1, 132, 32, 2, 211 ("did the ball go over the target?") almost as fast as we could indicate the figures with our hands, and he promptly signalled back with his hands: 122, 11; 3, 211; 213, 2, 122, 211; 211, 11; 322; 132, 3, 32, 33, 211 ("Ad; it went to the right"). In shooting at long range, 500, 800, 900, or 1,000 yards, it is desirable to be able to readily communicate with the marker, and this mode will be found very convenient. Even if the whole alphabet be not used, it will be easy to arrange a few numbers to represent the most common requirements, as 132 for: "Repeat your examination of the target" (right hand up, left hand out, right hand out, 1, 3, 2), and so of other sentences. Hunters can use this sign language for silent communication about game appearing, or otherwise. The *Farmer*, by having the table of letters and numbers learned by all on the farm, which can be quickly done, will have the easy means of communicating with men or boys in distant fields, and thus save a world of steps.

Winter Oats.—"G. H. A." An experiment with winter oats last season was a complete failure with us. They grew until the latter part of the winter, when every spike was destroyed. We do not advise any one to risk sowing them for a crop, so far north as the latitude of New York, until tested in a small way first.

North Carolina is having good work done in its Agricultural Department, by Dr. Le Duc, its chemist, in the important fertilizer question. His labors have tended to place the manufacture and trade on a reliable basis, which means much when it is considered that about one million dollar's worth of fertilizers are sold and used in that State every year. We understand that preparations are now being made for more extensive experimental work and investigations under the auspices of the Department, and that an excellent assistant chemist, Mr. Geo. Warnecke, who first came from Germany by invitation to the Connecticut Agricultural Experiment Station at Middletown, has already been engaged.

Bat Guano.—"W. W.," Round Rock, Tex. This manure is not yet in the market as a commercial article. Its composition varies widely, according as it is pure, or mixed with inert matters, or been wet or dry. It is especially valuable for the nitrogen it contains, the proportion of which varies from one to ten per cent; it also contains from $\frac{1}{4}$ to $\frac{1}{2}$ per cent of phosphoric acid. Its value, compared with commercial fertilizers, is from \$10 to \$10 per ton. Bat guano, found in the caves frequented by these animals, will make a good manure, especially for grains, but may also be used with profit on any crop requiring a strong manure, *not* rich in potash.

Tomato Catsup.—There is a wonderful difference among the various articles called Tomato Catsup, from the rich sauce, so thick it will hardly pour, to the thin, watery stuff that would not keep but for the vinegar and salt it contains. Every family should make its own, not only as a matter of economy, but of safety. If one *must* buy, avoid the bright red attractive looking compounds, as they are artificially colored. The cheap stuff sold to restaurants is made from the peelings and other refuse of the canning factories. Good catsup can only be made when the fruit is in perfection; towards the end of the season, when the nights get cool, and growth is slow, the fruit is watery, and will not yield the rich pulp of the best fruit. Select ripe tomatoes, cutting away any green portions, cut in pieces, stew until thoroughly done, and rub through a sieve fine enough to retain the seeds. Evaporate what passes the sieve to the desired thickness; for this, no rules by quantity can be given, as a bushel of some tomatoes will yield twice as much pulp as others. The evaporation should go on over a slow fire, being careful not to scorch it. When thick enough to pour from a cruet, without inconvenience, add salt and spices. Here the recipes give the greatest possible variety. Be sure and use salt enough; a chopped onion, or clove of garlic, tied in a cloth and cooked in the pulp, to give *just a suspicion* of the flavor, is liked by many; Allspice, Black Pepper, Cayenne, and Mustard, are the principal spices, and are used according to the taste of the consumers. One recipe directs for a half bushel of tomatoes; Cloves, two teaspoonfuls, Cinnamon, Allspice, and Black Pepper, two tablespoonfuls each; these are not to be ground, but bruised, placed in a little bag and boiled in the pulp while it is being evaporated; when the pulp is thick enough, remove the bag and add Mustard, ground, two tablespoonfuls; Cayenne Pepper, two teaspoonfuls; good Vinegar, two quarts, and salt to the taste. Another recipe uses all ground spices, viz.: For the pulp from $\frac{1}{2}$ bushel of fruit: Allspice and Cloves, $\frac{1}{4}$ oz. each; Mustard, $\frac{1}{2}$ oz. Black Pepper, 3 oz.; Mace, $\frac{1}{4}$ oz.; Cayenne, $\frac{1}{2}$ oz.; Salt, 6 oz. or sufficient, and Vinegar, 2 qts. Add the spices, boil a minute or two, cool, and bottle.

Cucumber Catsup.—This recipe, given several years ago, is republished by request. Take overgrown cucumbers, before they turn yellow, peel, and grate on a very coarse grater. Allow the pulp to drain on a colander, then sift through a coarse sieve to separate the seeds. Half fill wide-mouthed bottles or preserving jars with this pulp, and fill up with good vinegar. When served, add salt and pepper. It has precisely the odor and flavor of fresh cucumbers, and makes an acceptable accompaniment to cold meats. In our first attempt at making this, finding no grater coarse enough, and buying a large cover which had outlived the wash-boiler to which it belonged, using a large nail, we converted this into a grater, which, if not handsome, was efficient.

Lassell Seminary, Auburndale, Mass., presents features too seldom found in educational institutions for girls, in being especially strong in those branches of study bearing on domestic life. The practical methods of training adopted, are spoken of in high terms by people familiar with the working of the school.

Pasturing Grass Fields, especially newly-seeded stubbles, is a bad practice, and recognized as such by most good farmers in this country. In other countries, and in sections of this where the ground does not freeze hard, it may do no harm, indeed be a positive benefit to graze fattening animals on grass fields, as then there is no danger of damage by frost, and the droppings

of the cattle serve to enrich the land. But in the colder regions, the grass roots want all the protection from frost that the uncultured aftermath provides. Instead of feeding such lands, particularly those newly seeded, it is more profitable to fertilize them, either with a fine compost or some artificial fertilizer. Fall applications of manure strengthen and multiply the grass roots, and put the plants in a vigorous condition to withstand the winter, and for an early start in spring. All fertilizers should be applied to grass as early in the season as possible—better immediately after haying—so that it may be used in this season's growth. If not applied until late, much of it may be wasted by leaching in light soil, and washing away on heavy lands. It is said above that fattening cattle only were suitable for grazing grass fields. This is because that in the production of fat none of the elements of fertility—save those supplied in abundance by nature—are taken from the land, all of these being returned in the faeces. But a growing animal takes large amounts of phosphates for its bones, and of nitrogen for its muscle; and a milch cow takes phosphates for her milk; both take some potash. This fact should always be remembered, that mature fattening animals do not deteriorate the land, while growing animals and milch cows draw on its fertility.

Mistakes About Goats.—"W. H.," Watertown, Mass. Goats do not have kids four times a year, nor two or more at a birth. All hope of profit or fortune from such increase as that will have to be abandoned. Goats increase the same as sheep, and are no more prolific.

Packing Butter for Winter.—"Mrs. V.," Summit Park, Col. To pack butter for winter, begin when the weather is cool, and the butter can be kept hard. Free the butter from milk by repeated washing with cold spring water. Salt at the rate of one ounce to the pound, and set the butter away for 24 hours. Then re-work, getting all the milky brine away, and add one-fourth as much salt as before, to replace the waste. Then pack closely in layers two inches thick in clean, new, white oak tubs or pails, which have been scalded and soaked in brine. When the tub is full to the top, cover the butter with a piece of muslin dipped in cold water, and cover with salt. Fasten the cover, and put away in a dry, cool cellar.

Exports and Imports.—The family that produces and sells more than is bought, is growing richer. So with a nation. The official reports for the fiscal year up to July 1st, shows that this country sent abroad of its products to the amount of \$352,049,639, while it imported only \$285,757,455—a gain to us of \$76,292,184. The export of our products, exclusive of specie, were \$51,327,700 greater than for the year ending July 1, 1877, and \$77,808,842 greater than for the year ending July 1, 1876.

The Colorado Beetle.—Experience shows that we have this enemy in our power, if we only make use of the simple means at hand for putting an end to him. In many localities the beetles and larvae are but few in number, and the potato vines are strong and vigorous. For these reasons we hear farmers say, "the beetle is doing no harm, it is not worth while to bother with him." So the pest is left to gather force for another year. If every one possible were destroyed, but few would go into winter quarters, to appear next season. While the beetles are thus reduced in numbers, we may effectively prevent them from doing much harm next season, by poisoning all of the late brood wherever they may be found. This is a duty every man owes the community, and no one should be so selfish or numbing of other's rights, or convenience, as to neglect it.

The American Agriculturist in Japan.—S. Tsuda, Editor of the "No-Gio Lashi," the Japanese agricultural journal, mentioned some months ago, writes: "Let me assure you that your paper has been of great benefit to the Japanese.... It is my great desire to make the 'No-Gio Lashi' to Japan, what the *American Agriculturist* is to America and the rest of the world."

As to Sowing Wheat.—"T. S. C. H.," Essex Co., Mass. Very full directions for sowing wheat will be found in the monthly "hints for work." The soil must be well drained, or wheat will not thrive, and it will be liable to be heaved out by frost and winter killed. The Clawson wheat is now very popular. Wheat straw is of little value for feed, without a generous mixture of ground grain and roots, say corn and turnips; but neither of them is good for growing and fattening animals.

Information About Poultry.—"B. C. E.," Port Robinson, Ont. It would be misleading to give estimates of what can be done in poultry raising without knowing all the facts in the case. General information can be had from the following books: "An Egg Farm," by Stoddard; "Wright's Practical Poultry Keeper," and "Poultry Farm and Market," by Corbett.

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Agricultural Notes from Channel Islands.

From our Special Correspondent.

Jersey, Guernsey, Alderney, and Sark, lying just off the coast of Normandy, France—mere rocky isles, sprinkled about with hundreds of lesser rocks—are the so-called Channel Islands, dependencies of Great Britain, but not colonial possessions, and these together constitute one of London's most noteworthy kitchen-gardens, though three of them are known in America mostly for their cattle.

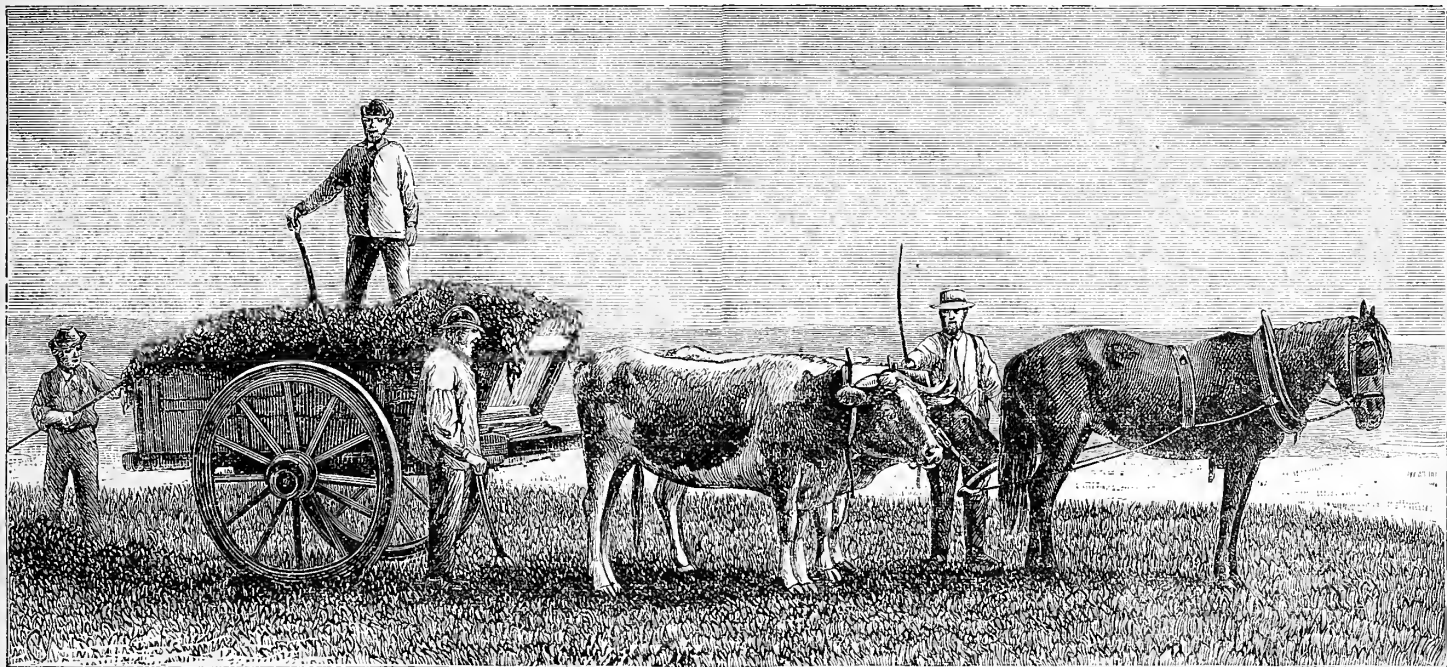
Potatoes are Jersey's great specialty, the season for which extends from the latter part of May to the middle of July, and a special potato steamer leaves St. Heliers daily for London. Guernsey's specialties are grapes, plums, figs, pears, cut flow-

oxen and one or two pair of horses, followed by the farmers with their hooks and forks, is a picturesque sight. Below is an illustration of such a team; it shows the peculiar cart and an odd form of yoke, which is a straight piece fastened behind the horns, with a straight rod extending half down each side of the neck, and a cord underneath, to serve as a bow. The number of men to each team shows an abundance of labor, which would hardly be economical in America. The price of *Herm vrac*, delivered in Sark, is from five to six shillings per ton, and it requires from 22 to 25 shillings' worth (\$5.50 to \$6.25) to manure an English acre.

Over 100 tons of grapes will be shipped from St. Peter Port, Guernsey, to London, this season. Hamburgs and Muscats are the chief varieties, and these are raised in greenhouses without artificial heat. We visited one vinery comprising 11 greenhouses, which will produce this year over four tons. Several hundred weight have already been shipped to London, where they brought from 2s. 6d. to 3s. 6d. (62 to 87 cts.) per pound, wholesale, and at this time they retail in London from 5 to 8s. per pound. The vines are placed about one

neys, to which they are similar in color and physique, but the Guernseys are generally larger and finer, and give more milk. The Guernseys are larger than the Jerseys, and in color are usually reddish-yellow and white, often curiously spotted with white, and have uniformly yellow skins. They give more milk than the Jerseys, and the butter is higher colored—indeed, so marked is the yellow hue that it is wrongly supposed by strangers, that Guernsey butter is artificially colored. Another important advantage claimed for them over the Jerseys is that they can be fattened for beef after having served their time as dairy cattle.

Pasture land is scarce and expensive. Grass must be economized, so all the cows are tethered. By this means their rations are given in known quantities, and they make the most of what comes within the scope of their tethers, instead of wandering about picking up the daintiest morsels and trampling down the rest. They are generally much petted, and are as docile as kittens. Singularly enough, considering the affection of their owners for them, they are seldom given proper names. In conversation, they are distinguished by such



COLLECTING SEA-WEED FOR MANURE IN THE CHANNEL ISLANDS.

ers, including camellias which flourish in the open air, and fresh fish. Sark supplies fish and rabbits, and the little island of Herm, rabbits, and *vraic* or sea-weed. The rabbits live among the furze, and are bred in immense numbers. During a recent season one boatman carried 7,000 from Herm to the Guernsey market, where they were sold for 10 pence (20 cents) apiece. Meat, with the exception of rabbits and chickens, is scarce in Sark and expensive, and milk brings 4 pence (8 cents) a quart; butter, 1s. 6d. (37 cts.) a pound; eggs, 1 shilling (25 cts.) a dozen; and a six-pound loaf of wheat-bread, from 1 shilling 3 farthings to 1s. 2d. (26 to 29 cts.).

Jersey produces a remarkable variety of cabbage, called the "Jersey Cow Cabbage," which grows to the height of four to six feet, and is cultivated for fodder. The stalk, which is tall and straight, is often made into walking sticks; this, when smoothed off and varnished, is similar in appearance to a bamboo cane, and most travellers who visit the island carry away a cabbage walking stick.

There is an old proverb current in the Channel Islands: "*Point de vraie, point de hautgard!*" which, being translated, means: "No sea-weed, no wheat-field!" *Vraie* is the local name for the sea-weed, which grows in immense quantities along the rocky shores, and which is used for manure. The season for gathering it is limited by law, and extends, I believe, from Feb. 1 to August 15. The live weed is torn from the rocks, and heaped upon the beach to dry, after which it is conveyed by carts to the fields. A *vraic* cart, drawn by a yoke of

foot apart, and are trimmed close, allowing the sunshine to enter freely. While green, the berries are thinned very severely at two different periods, consequently the berries are very large, perfect in shape, and highly flavored. Most of the plants that I have seen were remarkably healthy, but the red spider is common in the Guernsey vineries, and does much injury. Keeping the leaves abundantly showered with water, though it is but partially effective, is considered the only feasible remedy.

The farms in these Islands are, without exception, small, the dairy work generally managed by women, and the implements and mode of work simple, even primitive. Much of the work is also performed by women, who receive a franc or a franc and a half (29 or 30 cts.) per day. I saw no cattle market. The industry for which the Islands are specially noted abroad—cattle breeding, is mostly controlled by an agent in England, who takes orders from foreign stock fanciers, which he refers to local dealers in the Islands who are good judges of cattle. In the Channel Islands, one hears little of "Alderney" cows; Jerseys and Guernseys are the two standards, and they differ widely in their characteristics. The Jerseys resemble the cattle of Brittany, from which they are said to have been bred. They are small, symmetrical, and with graceful proportions; they have deer-like heads, and are generally mouse-colored, with black points, and always black snouts. Alderney has given its name to a breed of cattle, but comparatively few are exported. The Guernseys are said to have been bred up from the Alder-

phrases as "the old cow," or "the big cow," or "the last calf." Some of the prize Guernseys give 20, 24, and even 28 quarts of milk per day. In Guernsey, during summer, the cows are generally milked at morning, noon, and night. The milking is usually done by women. No calf is allowed to be sent from Sark to the neighboring islands without a certificate from the Seigneur (the Lord of the Manor), giving a permit, and stating the animal's pedigree, nor from the other islands without a similar document from the proper authorities.

"La Grande Charrue" (the Great Plow), is an institution in Guernsey. It is used for deep plowing, and is large and clumsy. Several farmers club together to use it—the team being made up of all the oxen and horses which the party can muster. The Great Plow is frequently honored with a team of four oxen and six or eight horses, or two oxen and ten or twelve horses, making quite an imposing turnout. After each day's plowing, the farmers who have taken part, hold a festival in the evening. Some of the small plows in common use are awkward in the extreme, resembling one of our ordinary one-horse plows; but, between it and the team of two horses, a low-wheeled carriage-part with pole is introduced, by which means the plow is removed far from the horses, half of their force being expended in lifting the carriage, which is below the line of traction; and were the strength of the team sufficient, I should expect to see the two wheels dangling in the air
Sark, July 15th, 1878. G. W. W. H

Hints for Work.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.]

Wheat and Rye.—Sowing the fall crops is the principal work of this month. It is useless to expect a good harvest unless the sowing of the seed is well done. There are several points to be studied:

The Fitting of the Soil is of the greatest importance. Wheat requires a fine mellow soil for the seed, and a light soil to be well compacted about the sowed grains. If any vacant places are left, as would be were the soil cloddy, the rootlets being exposed to air, will dry and perish. Therefore, after plowing, cultivate, or harrow repeatedly until all the clods are made fine.

The Surface Soil may be lumpy and somewhat rough, but the lumps should not be so large as to prevent the spires of wheat reaching the surface.

The Roller Should be Used immediately after the plow, to break up the lumps; then the cultivator and harrow will finish the work. This is the proper use of the roller. Its misuse is to roll the ground after the seed has been sown, thus leaving the surface packed down close and solid, in which state it will crust over after the first shower.

An Out or Barley Stubble should be well cultivated to destroy the sprouted seed which has been shelled in harvesting. We have heard it said that this volunteer growth protects the sown crop, which is a great mistake: it is really weeds, and crowds the young wheat or rye, prevents it from occupying the ground, and seriously injures it.

The Young Plant Should be Well Fed.—A weak plant will fail unless it has plenty of the right kind of food, and in such a condition as to be readily absorbed, digested, and assimilated. Thoroughly decomposed stable manure furnishes such food, and is a good stand-by for the entire growth of the crop. Properly prepared fertilizers—rich in nitrates (containing nitrogen) of potash or soda, and especially in soluble phosphoric acid, which is known to have a remarkable effect on the development of the young rootlets—may be used with safety and comparative certainty.

The Hessian Fly has done much damage, especially to barley. The spring brood seems to have been the most injurious. Late sowing, that is after the 10th to the 15th of September, will tend to prevent the effective deposit of eggs, and thus greatly lessen the number and vigor of the spring brood. Although by forcing the early sown wheat to a strong growth, it can be secured against the fly, yet we thereby furnish breeding places for insects whose progeny will attack the oats, barley, and wheat next spring.

Selecting Seed.—When it is inconvenient to attend to the selection of good seed, it is profitable to pay double or treble the market price for grain to a farmer who will take pains to grow nice, clean seed of the best varieties, than for a farmer to go to his own bin and take the seed as it comes, good and poor, with many foul seeds in it. A farmer who sows poor seed may save a dollar per acre, but he will lose ten for every one saved.

Cultivating the Fall-sown Crops.—It will be found decidedly beneficial to use a sloping-tooth barrow soon after sowing, and before the spire shows above ground, and again as soon as it has become well rooted. A harrow of the kind referred to was described in the *American Agriculturist* for August. After having tested this harrow, we find it to do excellent work with both sloping and straight teeth. It is light and passes easily over the loose ground, disturbing only the surface and killing only the shallow-rooted weeds, leaving the wheat uninjured. The loosening of the soil benefits the wheat, and prepares the ground for the timothy seed.

Harrowing Disturbs the Hessian Fly.—Doubtless this is because the wheat is pushed forward by the stirring of the soil, and many maggots are certainly destroyed.

Steeping the Seed.—For at least the partial preven-

tion of rust and smut in wheat the seed should be steeped in a strong solution of common salt, or in a solution of 4 ounces of sulphate of copper (blue vitriol, or copperas) in a gallon of water, for one hour. The seed is then drained and sprinkled with dry lime, when it may be sown immediately.

Water Furrows.—When all else is done, make the necessary water furrows at once. There may come a heavy rain the next day and do damage. Disperse the water into several channels, rather than permit it to collect in one or two. When the field is in grass, these water furrows will be useful in spreading the rain more evenly over the field.

Seeding to Grass.—It is a good practice on fertile soil to sow grass-seed two weeks after the wheat is put in. Thrifty growing timothy keeps the wheat back, as proved the past season on the writer's field. Other farmers corroborate this experience.

Sowing Right and Left.—After waiting two weeks for a still day the past spring to sow clover, the writer tried sowing with the right and left hand alternately, and it answered well. The method is this: With the wind blowing from the right over to the left, cast with the right hand; in returning, step seven or eight paces towards the wind, and cast with the left hand. There will be then no doubled places, and no streaks missed. To get the method, practise with light-colored sand, or chaff.

Root Crops.—Where mangels or ruta-bagas are crowded, pull the superfluous roots for the cows. The fresh feed will be useful, and those remaining will occupy the vacant space, and make a better growth by the thinning. White turnips may yet be sown if the land is rich, or made so. A vacant potato stubble treated with 250 lbs. of fine bone-dust per acre, will give a vigorous growth of turnips.

Buckwheat should be cut before frost. If a light frost kills the tops, it may be cut at once. Cut with a cradle or a reaper, while the dew is on, early in the morning, otherwise the grain will shell badly. Leave it in the swath until the straw is dry, then rake into gavels, which, without binding, set into small stocks, where they will dry in a day or two of bright, breezy weather. Then draw the crop to the barn in racks upon which barn sheets or blankets are spread, to catch the shelled grain, and thrash at once. If a machine is used, the concave should be removed and a piece of plank substituted, or the teeth will break the grain. When thrashed it should be cleaned immediately, and carefully stored, as it is apt to heat.

Late Potatoes.—As a measure of precaution for next season, every potato-beetle that can be found should be destroyed. When the leaves are eaten from potato vines, the growth of the whole plant stops; if new leaves start, it is at the expense of the tubers. So, kill the beetles, and increase the crop.

Corn.—As soon as the grain is glazed, corn should be cut, if the stalks are to be saved. Frost greatly injures the fodder, and reduces its feeding value. Before cutting, the seed for next year should be selected, taking ears from stalks that have borne two or more good ones. The tops of the selected stalks may be broken down, to mark them, and when the crop is cut, left standing until the ears are perfectly ripe, then they should be gathered, and stored in a dry, cool place. Such selections of seed will tell well in the next crop.

Weeds.—A great number of weeds are now maturing seeds; to permit this is simply to make trouble and expense, in years to come. Every weed about fence-rows, in fields, or about barns, and in nooks and corners, should be cut at once, and burned. By persevering in this way for a few years, a farm may be cleared of these fertility thieves.

Live Stock.—For hints about the management of farm animals refer to the August *American Agriculturist*. We will only add that, as cold weather is approaching, any falling off in condition should be guarded against. Extra feed may be given this month to young animals, with profit.

Sundry Matters.—This is the usual season for renewing insurances, and it ought not to be overlooked. The farm buildings, tools, and crops, should be secured so that in case of fire all will not be lost. . . . Preparations should be made for storing the

root crops; a substantial, permanent root house will always repay its cost, and a good one may be made very cheaply. . . . All the harvesting implements and machines should be cleaned and oiled—both wood-work and iron—and stored in a dry, covered place. To remove rust, use crude petroleum, then brush over linseed oil. Petroleum is a good preserver of wood. . . . Chicken coops and other "traps" put away until next season, in an outhouse, or shed. . . . Clean up all rubbish about yards and buildings, and remove to manure heaps—having all possible materials for compost gathered and utilized. . . . The sum of the small things which may be done with economy now that leisure offers opportunity, will be considerable. . . . Do not overlook the Fairs, and make a business of attending as many as possible, with observant eyes to things of interest and utility.

Notes for the Orchard and Garden.

A few months ago we suggested that it was a profitable use of time for cultivators to visit one another—to make excursions not only for pleasure but instruction. Equally, if not more, profitable will it be to visit a central point where the cultivators of a wide district have brought together the results of their season's labors for exhibition and comparison. This is what we find, or should find, at the various fairs, and these should be visited, as a matter of duty by every one, whether his orchard or garden be large or small. Visit the local Fair by all means, whether it be Town or County, and as many more as time and means allow.—"But these local fairs have but little interest."—Then make them interesting, and begin now to set about insuring a good exhibition of orchard and garden products. Some one in such matters must be a leader or agitator. Many fail to exhibit, because they did not think of it. See that your neighbors have not this excuse. Others would exhibit if they thought any one else would.—Tell such that you will exhibit if they will. Still others can be stirred up by a spirit of rivalry. Send word to such that you intend to beat them on grapes, turnips, or whatever the special hobby may be. It is astonishing how much one person, by a few timely words, can make the Horticultural Department of a fair a success. Who can better speak these words than the readers of the *American Agriculturist*? Do not refrain from exhibiting because you fear that some one else has better. Show the best you have, and if another has better of the kind, learn how he produces it. No matter if you are a Vanderbilt in wealth, and the premium awarded you is only 50c., take the money. This declining premiums by wealthy or well-to-do persons, touches the pride of those in humble condition, and they stay away. We have known a flourishing society nearly ruined by this, as it drove away the mechanics and others with small gardens. Wealthy persons do well when they make presents in cash to such societies, but they should always take their premiums. What ever is shown, let it be arranged to appear at its best. There are neat and slovenly ways of showing cabbages. Go to the fairs by all means, but go with something to exhibit, and be sure to take wife and children besides.

Orchard and Nursery.

In these notes on work are included answers to many correspondents, though this is seldom stated. Just now, as in past years, many ask about

Fall Planting.—The answer will depend much upon the locality of the inquirer. Other things being equal, the better condition of the soil, the greater comfort in working, insuring better planting, and the less pressing character of other work are all in favor of fall planting. Besides these, the trees having become established in the soil, start much earlier in spring, and are thus better prepared to resist the summer drouths than those set in spring. In far northern localities, in which there is but a brief period between the time when trees can be taken up, and the setting in of winter, spring planting is preferable, but where there are some weeks of autumn weather, it is better to

plant all but the stone fruits in autumn. In autumn planting it is well to make

A *Mound of Earth* around the base of each tree, from 10 to 15 inches above the general level. This serves to keep water from settling at the roots, and protects them from frost, helps to keep away mice, and serves as a stay or support for the tree in a much better manner than staking. The earlier trees are planted, after they have completed their growth and ripened the wood, the better.

Stripping the Leaves from nursery trees is regarded by many as improper, but if done at the right time there is no objection to it. When the leaves have done their work they are of no further use to the tree, and will fall in a heavy storm or with the first frost, and no more injury will result from stripping them off by hand than if they were left to be removed by natural agents, provided it be done when they are fully mature and prepared to fall. Stripping, properly done, allows the trees to be set out some weeks earlier than otherwise, in the fall. If left on, the trees would be difficult to pack; there would be danger of heating in the package, and if the tree were planted with the leaves on, they would carry on an evaporation that would greatly injure if it did not kill it. See hints on

Gathering and Marketing Fruit in last and previous months' Notes. Windfalls should not be wasted; they may be used for vinegar, for drying, or be fed to the pigs. Those who have large orchards find it profitable to provide a hand-press to treat windfalls as they occur, long before the general pressing, and materially increase the amount of vinegar.

Propagating.—Budding may be continued so long as the stocks are in growing condition; cut the ties of those buds that have taken. Collect peach and plum stones, and keep in sand until sown.

The Fruit Garden.

The reasons given for fall planting in the orchard, hold with the hardy small fruits and dwarf trees in the garden.

Strawberries.—Keep the beds entirely free from weeds, and remove all runners not needed. Planting was discussed last month, and an article giving useful hints will be found on another page.

Blackberries and Raspberries push their growth so early in spring, that fall planting is especially desirable for them. If not already shortened as directed last month, do it now. If it is desired to propagate *Black caps*, and other varieties that root from the tips, branches should be left uncut for the purpose; while they often take root without help, it is well to make sure by placing earth on the ends of the canes, to hold them in place.

Currants and Gooseberries may be pruned when the leaves have fallen, or will drop at a slight touch. Cuttings of this year's growth should be set at that time; make them 4 to 6 inches long, and set 4 inches apart in rows, with one end above the surface. Cuttings set this month, or early next, will usually be well rooted by winter.

Grapes.—In gathering, use scissors made for the purpose, which hold the bunch after it is severed, and avoid the necessity of handling, which, by removing the bloom, greatly injures their appearance and consequently the sale. Gather in trays or shallow boxes and keep in a cool, airy room for a few days, until the skin toughens somewhat.

Packing Grapes.—For immediate sale, or later to keep, wooden boxes of thin stuff, to hold 3 or 5 lbs. are preferred, though some growers use paper boxes. The bottom of the box is removed, and the grapes laid in, handling only by the stems, and enough put in to make it necessary to use slight pressure to bring the bottom to its place—which the curing or exposure, by toughening the skins, makes possible without cracking the fruit. See last month on mildew.

Pears need careful watching that they may be picked as soon as they mature; with some varieties, a delay of a few days will cause loss by decay at the core. Whenever the stem of the fruit parts readily from the branch, the pear should be picked, no matter how hard, and ripened in the house. Select specimens are sent to market in shallow

boxes holding but a single layer, each pear wrapped in white or colored tissue paper. Pruning to bring the tree into proper shape may be done now.

Kitchen and Market Garden.

Now that the cool nights have come, the late crops will be making a rapid growth not possible when both nights and days were hot. But cool nights are equally favorable to certain weeds, and there can be no relaxation of vigilance with these.

Clear up as you go.—When a crop, large or small, is taken off, clear up at once the refuse, and if the land is not needed for any crop, keep the weeds down by running the cultivator over it whenever that is used among the crops.

Cold Frame Plants are to be provided for. Those who are only used to the old fashioned way of gardening, which began with spring and ended with fall, do not understand that the earliest cabbages, lettuce, etc., are from seeds sown the fall before, the plants kept through the winter in cold frames, and set out in early spring. There is nothing about this that can not be done by any farmer or other person who will take the needed pains. We will describe the frame in due time; the seed for the plants must be sown this month. In order to have them of the proper size, gardeners, about New York, make two sowings, on the 10th and 15th of this month. Farther North the sowing is earlier, and in more Southern localities, later. The seeds of the Early Cabbages, Cauliflowers, and Lettuce, are sown in well prepared seed beds, and cared for the same as when sown in spring.

In *Virginia and Southward*, cold frames are not needed, but the plants are protected by ridges as will be described another month; the seeds for these, are sown the later part of this month, or early next, according to locality.

Celery should be making a good growth, which should be favored by frequent stirring the soil. If early celery is needed, some of the most forward may be straightened up, having the earth drawn to it with the hand; in about a week it is banked up with earth to half its height; and in another week banked again. It should be used as soon as blanched (which requires 10 days or so), as it soon becomes hollow if earthed up while in the growing state.

Corn.—As fast as the ears are taken from a planting, cut up the stalks to cure, if not fed out at once. During its abundance, dry a supply for winter; see note on page 287, last month, on preserving with Tartaric Acid.

Borecole, Kale, or in the New York market "Sprouts," is sown early this month. It is merely a kind of cabbage that does not make a head. Some varieties are quite ornamental, having handsomely curled and fringed leaves; sow the seeds in rows 15 inches apart; thin to six or eight inches, and keep clear of weeds until winter, when it is to be covered with straw, and may be used in spring.

Spinach for next spring is sown in the climate of New York, between the first and middle of the month. Sow in drills 15 inches apart, and keep clean; thin to 6 or 8 inches, using the thinnings.

Corn Salad is treated the same as Spinach, and is used in spring, mainly by Europeans.

Sweet Potatoes.—Prevent the vines from taking root by moving them occasionally.

Turnips.—The flat kind may be sown; Rep-top Strap-leaved is best, and will usually make a good crop, if sown as late as the middle of the month.

Melons.—Remove all that are not likely to ripen; the small musk melons may be used for "Mangoes," or stuffed pickles, if desired.

Shallots.—A hardy onion, which is ready for use in early spring, may be set, using the small bulbs.

Seeds.—If seeds are saved, they should never be from the leavings of a crop, but the finest and earliest plants or fruits selected in advance, and so marked that they will not be taken for use. If several varieties of melons, squashes, and others of the family, of corn, etc., are grown in a small garden, it is of little use to save their seeds, as they will be so mixed that only mongrels will result.

Radishes.—Those who like radishes in winter,

may sow the Chinese Rose-colored Winter, and treat and keep it the same as turnips.

Et Cetera.—Cucumbers, Martynias, Green Tomatoes, String Beans, etc., should be gathered while young and tender, and salted as stated on page 345.... Make Catsup while Tomatoes are plenty.... Use ripe Cucumbers for Cucumber Catsup. They may be peeled, sliced, dipped in batter and fried like egg plant.... Lastly, weeds.

Flower Garden and Lawn.

Now that the hottest days are over, an increased growth of grass will require a more frequent use of the mower. On new lawns the "Finger" or "Crab-grass" (*Panicum sanguinale*), is often abundant, especially the first year; fortunately it is only an annual, and if kept from seeding it will give but little trouble hereafter.

New Lawns may be made; grass sown this month, or, in the warmer States, next month, usually gives good results; and where the season is favorable for it to get well established before growth ceases, fall sowing is to be preferred to spring.

White Grub in Lawns.—A friend near Boston, whose extensive lawns have been models of excellence, writes that the white grub has been so destructive that some acres of turf are destroyed, the roots being eaten off just at the surface, so that the grass may be rolled up like a carpet. We have known of similar trouble, but not on so extensive a scale. The work is done so thoroughly that there are not roots enough left to allow the grass to recover if the turf were rolled, to bring it in close contact with the soil, and kept moist by watering, for which he has ample facilities, and there was nothing to be done but to make the lawn anew.

Is the Grub increasing in numbers? is a serious question for cultivators of all kinds, for there are but few plants, including young trees, that are not attacked by it. If it is not on the increase, it is noticed more closely, as we hear more of it of late than in former years. It is, as most readers know, the larva of the May or Dor-bug, and lives three years in the ground. As its presence is not suspected until the mischief is done, we can only make effective war against it in the perfect or beetle state. When discovered in large numbers on trees, the beetles should be caught by nets or otherwise, and as they are readily attracted by light, traps with a lamp for a "bait" must be devised.

Herbaceous Perennials.—For many of these, fall is the best season for transplanting; a few, like the Pæony, will not bloom the same year if moved in spring, hence these must always be transplanted now, unless we would lose a season of bloom. All the early bloomers, if set in the fall, will become well established and flower well next spring.

Bedding Plants.—Geraniums and such plants should now be at their best. If a stock is to be kept over winter, make cuttings for the purpose.

Chrysanthemums.—Those wanted to flower indoors, should be potted when the buds show, and shaded for a few days until they recover. Provide the tall growers with stakes, and keep them tied up, else they will be broken by storms.

Cannas.—Some of these are as desirable for their flowers as for their foliage; prolong the bloom by cutting away the stalks as soon as the flowers fade, unless seeds are wanted.

Dahlias need careful tying, and the larger branches may need separate stakes; the stems break readily; the flowers are heavy, especially when wet, and unless well cared for, they will be wrecked just when they should be most showy.

Ornamental Trees and Shrubs may often be advantageously transplanted in autumn, for the reasons mentioned under Orchard. Many prefer this season for the removal of Evergreens; success with these depends quite as much upon *how* as upon *when* it is done, the greatest care to prevent drying of the roots being essential at any season.

Greenhouse and Window Plants.

All plants in pots should be in the condition of an army waiting orders—ready for a move at any

minute." If houses and all their belongings are not in readiness, there is now no time to be lost.

Soils, Pots, and whatever other materials are likely to be needed, should be at hand under cover. In bringing in plants it is best to do it before a cool spell makes it necessary, as they can be examined and cleaned of insects if need be. Begin with the most tender, and bring them in gradually. House plants should not go to their quarters in the living-room at once, but be placed in a room where the windows can be left open all night, if need be, and thus gradually accustom them to confinement.

Seeds of Annuals for winter bloom may be sown now, and other sowings made later; Candytuft, Sweet Alyssum and Mignonette, are always in demand for cut flowers.

Hanging Baskets may be filled and furnished, and kept on the veranda until time to take them in.

Plants in open ground, such as Carnations, Tea and other roses, and others, expected to flower in winter, should be taken up and potted, and kept in a shady place until they recover.

Slight Frosts sometimes occur before the plants can be taken in; these may be prevented from doing damage to even the very tender plants by covering them with a sheet; even a few newspapers over the plants so secured that they will not be blown away, will answer the purpose.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Aug. 12th, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
27 d's this m'th	1,061,000	4,447,000	4,381,000	251,000	294,000	1,213,000
25 d's last m'th	1,032,000	4,904,000	3,992,000	490,000	261,000	1,137,000

SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
27 d's this m'th	1,048,000	6,259,000	6,411,000	437,000	—	1,507,000
25 d's last m'th	1,046,000	6,318,000	5,151,000	450,000	93,000	1,956,000

2. Comparison with same period at this time last year.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
27 days 1878.	361,000	4,447,000	4,381,000	251,000	294,000	1,213,000
27 days 1877.	321,000	2,476,000	2,931,000	61,000	206,000	1,042,000

3. Exports from New York, Jan. 1, to Aug. 12.

Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.
bbls.	bush.	bush.	bush.	bush.	bush.	bush.
77,159,205	27,101,173	18,239,911	2,561,907	1,515,149	2,086,051	206,112
77,159,205	27,101,173	18,239,911	2,561,907	1,515,149	2,086,051	206,112

4. Stock of grain in store at New York.

	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
1878	3,100	9,850,000	10,114,000	735,000	304,000	2,321,000	197,000
1877	3,100	1,534,700	8,385,100	192,000	389,700	90,300	277,500
1876	13,700	7,997,900	2,665,000	327,000	114,500	1,091,200	355,500
1875	27,200	7,504,600	1,932,200	68,700	—	1,793,200	456,500
1874	35,100	11,590,000	9,795,300	189,800	71,000	1,216,700	356,200

5. Tide-water Receipts at Albany, from opening of navigation to Aug. 7.

Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.
bush.	bush.	bush.	bush.	bush.	bush.	bush.
1878.	3,400	8,956,000	10,114,000	75,000	34,000	2,221,000

Gold has been up to 100%, and down to 100%, closing Aug. 12, at 100%, as against 100% on July 13; 100% on June 13; 100% on May 13; 100% on April 17; 100% on Jan. 12; 100% on Dec. 12; 100% on November 12; 100% on October 12; and 100% on July 12, 1877. An active business has been reported in Breadstuffs, mainly for home use, and export, but to an important extent also on speculative account. Prices have fluctuated frequently and widely, influenced chiefly by the unfavorable tenor of the domestic crop and weather reports, and the use made of these to promote speculative interests, especially in the Milwaukee and Chicago markets, where Spring Wheat has been ruling much higher, relatively, than on the seaboard, thus impeding the outward movement. Receipts of Grain, however, have been recently on the increase at the more prominent points of accumulation in the interior—notably so of new crop Winter—and more liberal

also at this port. Toward the close, the general market here has shown more firmness, with a rather confident inquiry for shipment, chiefly for Winter Wheat, steamer and sailing vessels grades of Corn, prime Rye, and No. 2 Chicago Oats. Home trade requirements have been fair, though, as a rule, not very urgent. Spring Wheat Flour has been advanced sharply, during the month, closing strong in price, on much lighter offerings, particularly of the Minnesota Extras. Provisions have been in more demand, and prices have been generally quoted higher. Wool has been more freely purchased at firmer prices, holders of desirable qualities of domestic showing much more confidence. Cotton has been quoted rather dearer, on a livelier business. Seeds have been attracting more attention; and prime rough Flaxseed has been purchased to an important aggregate for August and early September deliveries, at \$1.35-\$1.40, closing at \$1.40 per bush. Hay, Straw, and Hops have been quiet at irregular prices. Naval Stores and Petroleum, less freely dealt in, and quoted weaker in prices. Groceries, fairly active; Coffee, firmer; Sugars and Molasses, lower. Ocean Freighters have been more active, especially in the Grain and Petroleum interests, opening higher, but closing weaker. Grain rates by steam to Liverpool closed Aug. 12th at 7 1/2 d. (about 15 cents) per bushel; Glasgow, 6 1/2 d.; London, 6 1/2 d.; Bristol, 7 d.; Hull, 8 d.; the Continent, 8 d. 9 1/2 d. by rail to Liverpool, 6 1/2 d.; London, 6 1/2 d. per bush. Flour to Liverpool, by steam, 2s. 6d. (about 60 cents per bbl.); by rail at 2s.; London, 2s. 3d., and by steam, 2s. 6d.; Bristol, by steam, 2s. 9d. @ 3s., and rail, 2s. 4 1/2 d. @ 2s. 6d. per bbl. Provisions by steam to Liverpool, 30s. @ 15s. per ton. Butter, in refrigerators, 125s. Cotton, by rail, 7 1/2 d., and steam, 1 1/2 d. per lb. Grain, by rail, for Cork and orders, at 5s. 9d. @ 6s. per quarter (8 bushels), and to Continental ports, 5s. 4 1/2 d. @ 5s. 9d.; and from Philadelphia for Cork and orders, 6s. 3d. from Baltimore for Cork and orders, 6s. 3d. @ 6s. 6d., and Philadelphia for Lisbon, Wheat in bags, at 16 1/2 c. per bush.

CURRENT WHOLESALE PRICES.

	July 13.	Aug. 12.
PRICE OF GOLD	100 1-2	190 1-2
FLOUR—Super to Extra State	\$3 30	\$4 50
Super to Extra Southern	3 30	4 50
Extra Western	3 30	4 50
Extra Genesee	4 30	4 50
Standard Western	4 30	4 50
RYE FLOUR, Superfine	2 70	3 30
CORN—Meal	2 10	2 90
WHEAT—All kinds of White	1 10	1 26
All kinds of Red and Amber	90	1 15
CORN—Yellow	45	53
Mixed	40	43
White	45	53
OATS—Western	30	32
State	30	32
RYE	50	62
BARLEY	Nominal.	82 1/2 @ 1 25
BARLEY MALT	60 @ 1 10	65 @ 1 25
HAY—Bale, 100 lbs.	30	75
STRAW, 100 lbs.	25	50
COTTON—Middleings, 1/2 lb.	11 1/2 @ 1 1/2	12 @ 1 1/2
HOPS—Crop of 1877, 1/2 lb.	5	12
Old, 1/2 lb.	1	3
FRUIT—Live, Green, 1/2 lb.	35	47 1/2
SKED—Clover, West. & Str. 1/2 lb.	7 1/2 @ 8	Nominal.
Timothy, 1/2 bushel.	1 25 @ 1 40	1 30 @ 1 45
Flax, 1/2 bushel.	1 40 @ 1 50	1 35 @ 1 40
STOCK—Ref. & Grocery 1/2 lb.	6 1/2 @ 8 1/2	6 @ 8 1/2
MOLASSES, Cuba, 1/2 gal.	32	33
New Orleans, 1/2 gal.	23	24
COFFEE—Rio (Gold), 1/2 lb.	13	17
Tobacco, Kentucky, 1/2 lb.	2 1/2 @ 3	2 1/2 @ 3
Seed, Leaf, 1/2 lb.	4 @ 50	3 1/2 @ 50
Wool—Domestic, 1/2 lb.	20 @ 42	20 @ 44
Domestic, pulled, 1/2 lb.	22 @ 38	22 @ 42
California, spring clip, 1/2 lb.	12 @ 27	12 @ 28
California fall clip, 1/2 lb.	12 @ 19	12 @ 20
TALLOW, 1/2 lb.	6 1/2 @ 7	6 1/2 @ 7
OLEO-CARR—1/2 lb.	28 50 @ 30 00	30 00 @ 30 50
Pork—Moss, 1/2 lb.	10 @ 10 75	10 75 @ 11 25
Extra Prime, 1/2 barrel.	9 50 @ 9 87 1/2	9 75 @ 10 25
BEER—Extra, 1/2 mess.	10 50 @ 11 75	10 50 @ 11 75
LARD, in tins, & 1/2 lb.	6 75 @ 7 25	7 35 @ 7 85
BUTTER—State, 1/2 lb.	8 @ 20	8 @ 23
Western, poor to fancy, 1/2 lb.	5 @ 20	5 @ 22
WESTERN, 1/2 lb.	3 @ 8 1/2	3 @ 8
EGGS—Fresh, 1/2 dozen	8 @ 14	10 @ 16
POULTRY—Fowls, 1/2 lb.	9 @ 13	9 @ 12
Chickens, 1/2 lb.	12 @ 13	10 @ 14
Turkeys, 1/2 lb.	18 @ 28	14 @ 16
Geese, 1/2 pair	9 @ 15	10 @ 16
Ducks, 1/2 pair	40 @ 75	45 @ 75
Roosters, 1/2 lb.	5 @ 6	5 @ 6
PIGEONS, wild, 1/2 doz.	65 @ 90	75 @ 1 00
SQUABS, per dozen	1 50 @ 1 25	60 @ 1 75
APPLES—new, 1/2 barrel.	1 30 @ 1 50	1 30 @ 1 50
PEARS, 1/2 lb.	1 40 @ 1 50	2 00 @ 4 00
PEACHES, 1/2 crate.	4 @ 3 50	75 @ 3 60
CITRUS, 1/2 lb.	3 @ 8	— @ —
BLACKBERRIES, 1/2 qt.	6 @ 10	4 @ 10
PLUMS, 1/2 bush.	2 50 @ 4 00	2 00 @ 4 50
GOOSEBERRIES, 1/2 bush.	2 75 @ 5 50	1 75 @ 4 75
WHORTLEBERRIES, 1/2 bush.	3 50 @ 4 25	1 00 @ 3 00
FRUIT, domestic, 1/2 bush.	1 25 @ 1 30	1 25 @ 1 30
MELONS, per 100.	8 00 @ 35 00	8 00 @ 25 00
RADISHES, new, 1/2 100 bush.	40 @ 50	40 @ 50
PEAS—Green, 1/2 bush.	1 05 @ 1 10	1 25 @ —
Canada, in bond, 1/2 bu	30 @ 40	77 @ 78
1/2 bag	30 @ 40	65 @ 1 75
POTATOES, new, 1/2 bush.	1 75 @ 2 75	75 @ 1 50
BEETS, 1/2 100 bunches	1 00 @ 1 25	1 00 @ 1 50
TURNS, 1/2 bush.	2 00 @ 3 00	— @ —
white, 1/2 100 bunches	3 1/2 @ 7	3 1/2 @ 7 1/2
BROOM-CORN, 1/2 bush.	25 @ 50	— @ —
SPINACH, 1/2 bush.	50 @ 75	30 @ 1 00
TOMATOES, 1/2 basket	1 50 @ 5 00	1 00 @ 5 00
CABBAGES—new, 1/2 bush.	2 00 @ 6 00	2 00 @ 6 00
ONIONS—1/2 bush.	60 @ 65	— @ 1 25
GREEN CORN, 1/2 100.	25 @ 75	50 @ 75
LETTUCE, 1/2 bush.	75 @ 1 25	75 @ 1 00
STRING BEANS, 1/2 bush.	50 @ 2 00	75 @ 2 00
CUCUMBERS, 1/2 100.	— @ —	1 00 @ —
CARROTS, new, 1/2 100 bunches	— @ —	1 00 @ —

New York Live-Stock Markets.

WEEK ENDING	Beesves.	Cows.	Calves.	Sheep.	Swine.
July 22.....	10,960	54	3,636	26,563	22,703
July 29.....	13,198	85	3,011	28,714	19,421
Aug. 5.....	12,871	98	4,346	34,093	20,691
Aug. 12.....	13,325	103	3,750	26,296	21,628
Total for 4 Weeks.	43,854	337	14,793	115,668	84,443
do. for prev. 4 Weeks.	50,715	271	21,010	131,923	138,450

Beesves.—The market has been a poor one the past month. The heavy receipts, and the so-called "under consumption" together, brought prices down to the low average of 8 1/2 c.; the fall being most on poor stock, of which many lots have been carried over from week to week wanting buyers. To make things worse, the foreign trade has fallen off, one or two shippers having suspended operations, and others, looking in vain for profits, are reducing their business. As the month neared the close receipts fell off—the last week nearly one-third, and prices recovered a little. Still the tone of the market was bad, and with everything in favor of sellers but a small advance was made. For once, however, the pens were left empty, and stocks were cleared off, and that was a gain. Prices at the close were 10 1/2 c. per lb for extra steers of 1,350 lbs., estimated 57 lbs. to the 100; 10c. per lb for 1,293 lb steers, same estimate; 9 1/2 c. per lb for 1,250 lbs., estimated 56 lbs. to the 100; 8 1/2 c. per lb for lighter cattle, and 6 1/2 c. per lb for Texans of 55 lbs. to the 100. A lot of bulls were sold at \$2.60 per 100 lbs., live weight. Dressed beef sold at 6c. @ 8c. per lb for natives, and 4c. @ 6c. per lb for Texans.

WEEK ENDING	Range.	Large Sales.	Aver.
July 22.....	7 @ 10 1/2 c.	8 1/2 @ 9 c.	9 c.
July 29.....	7 1/2 @ 10 1/2 c.	8 1/2 @ 9 c.	9 1/2 c.
Aug. 5.....	6 1/2 @ 10 1/2 c.	8 @ 9 c.	8 1/2 c.
Aug. 12.....	6 1/2 @ 10 1/2 c.	8 @ 9 c.	9 c.

Cows.—After a struggle to maintain prices, dealers have been forced to give way, and the best cows have sold for \$60 @ \$65. Ordinary milkers sell for \$50 to \$55. Stock is coming in too freely for the light demand.

Calves.—The trade in veals has been dull, but prices have held their own, and prime veals sold for 6 1/2 c. per lb, with 7c. for extra. Good to fair brought 5 1/2 c. @ 6c., and grass and buttermilk calves at 3 1/2 c. @ 4 1/2 c. per lb.

Sheep and Lambs.—Buyers have done what they pleased in the sheep market; no reasonable offer has been refused. The market closed more depressed than at the beginning of the month. The dead meat market is equally unsatisfactory. Prime heavy sheep were taken last week at 4 1/2 c. @ 5c. per lb for export; fair to good sold for 3 1/2 c. @ 4c. per lb live weight. Lambs brought \$4.25 @ \$5 per 100 lbs. Stock ewes brought \$4 per 100 lbs.

Swine have been steady through the month, closing at 4 1/2 c. per lb for live and 5 1/2 c. @ 6c. per lb for dressed. Market pigs brought 6 1/2 c. per lb.

The Horse Market.—The horse market has been extremely dull. There is no sale for green animals this hot weather, as they can not stand the unusual work on the hot city streets. Old veterans, which are daily dying off, have their places filled by younger animals, but no purchases are made that can be avoided. In the week ending Aug. 12th, 65 head were exported, and 2 full-blood Norman stallions, 2 mares, and a colt, were imported through Robt. Stoddard's bonded stables. A valuable trotting horse, valued at \$9,000, was also imported the same week. In a few weeks the usual fall demand will be looked for, and business may be more active. No useful quotations can be given at present.

Prices of Feed.

Bran, per ton.....	\$18.00 @ \$20.00
Middlings, per ton.....	19.00 @ 21.00
Sulphate of Potash, 41 per cent, per lb.....	15.00 @ 21.00
Lined-oil-cake, western, per ton.....	41.00 @ 47.00
Cotton-seed-cake, per ton.....	25.50 @ 30.00
Chandler's Scraps, per lb.....	3 @ 4

Prices of Fertilizers.

No. 1 Peruv. Guano 10 p. c. ammonia, standard, 1/2 ton.....	\$56.50
do. do. Lobos, do. do.....	47.50
do. do. guaranteed, 1/2 ton, cargo H.....	56.00
do. do. rectified, per ton, 3 1/2 p. c.....	69.00
do. do. do. do. 3 1/2 p. c.....	51.00
Soluble Pacific Guano, 1/2 ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Bone, 1/2 ton.....	55.00
Mapes' Complete Manure (Vile formula) 1,000 lbs.....	26.14
do. do. do. Grain and Grass, 1,000 lbs.....	25.00
do. Fruit and Vine Manure, do.....	17.50
do. Bone, strictly pure, meal..... per ton.	42.00
do. do. do. extra fine..... do.	40.00
do. do. do. fine..... do.	38.00
do. do. do. medium..... do.	36.00
do. do. do. dispersed..... do.	42.00
Stockbridge Corn Manure, per acre.....	20.00
do. Potato do.....	10.00
do. Tobacco do.....	50.00
do. Rye do.....	10.00
do. Wheat do.....	15.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Gypsum, Nova Scotia, ground, per ton.....	8.00
Nitrate of Potash (95 per cent.), per lb.....	9 @ 1/2 c.
Sulphate of Potash (potash 41 per cent) per lb.....	3 1/2 @ 4 c.
do. do. (potash 27 1/2 per cent) per lb.....	1 1/2 @ 2 c.
German Potash Salts (potash 12 to 15 p. c. p. ton.....	\$15.00 @ 18.00
Muriate of Potash (potash 50 per cent), per lb.....	2 @ 2 1/2 c.
Nitrate of Soda, per lb.....	4 c. @ 1 1/2 c.
Sulphate of Ammonia (25 per cent.), per lb.....	4 1/2 c. @ 5 c.
Dried Blood (ammonia 14 per cent) per ton.....	\$45.00 @ 50.00



containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

A Woman Farmer at Valley Springs, Dakota, who deserves success, wrote to Messrs. B. K. Bliss & Sons, in regard to their wheat prizes, as follows: "It did not occur to me in writing to you yesterday, that you might think it singular that a woman should write you for seed in order to compete with men for a prize. To convince you that I am not incompetent to try, I will mention a few items of the work I have accomplished already: We lost all we had, by fire, and came West, to make a new home. As soon as a portion of the claim could be broken up and made suitable, I commenced putting out forest trees and small fruits, as far as I could command the means to purchase. The first year I rode nine miles on horseback to the nearest timber; took up, brought home, and set out four hundred forest trees. The next year I set out four hundred feet of willow hedge, besides currants, blackberries, strawberries, and raspberries; the next year a large lot of asparagus, pie-plant, one hundred raspberries, and eighty dwarf cherry trees. This year I shall complete seven hundred feet of willow hedge, set one hundred raspberries, two hundred strawberries, and make a large garden, and flower beds, besides doing my own housework for four persons. Won't you please permit me to try for a prize?" She was placed in the list of competitors, and we hope to record her as first prize winner.

Manual of the Apiary, by A. J. Cook, Professor of Entomology in the Mich. Ag'l. College. The author is known to us as an earnest student, and excellent observer, and has in the present work given the latest views as to the physiology of the bee, and the recent improvements in bee-keeping. Like a true naturalist, he does not assume to know everything, but all through the work gives credit to other authors and reference to other works, where particular topics are treated more in detail. The work, 285 pages, abundantly illustrated, is sent from this office, postpaid, for \$1.25.

How Strawberries are Sold in Belgium.—Our correspondent "G. W. W. H." writes from Frankfurt: In travelling through Belgium in June, strawberries are brought to the car windows at every station—luscious great berries, some red, some white, often as large as a pullet's egg, and temptingly displayed in shallow baskets, made of split willow, in the form given in the engraving. Baskets of this shape seem to us well deserving of introduction in America. The construction is simple, strong, and inexpensive. A single willow with the handle and middle support of the bottom; a second with bent



to a circle forms the rim; and four others, *i. e.*, two on either side between the middle piece and rim, complete the foundation into which thin strips are braided. The depth is only a quarter inch, diameter three inches. On the bottom are a few fresh grape leaves on which are placed the berries, nearly all of them exposed to view.

"Ferns in Their Homes, and Ours," is the attractive title of a work on Ferns, and their Culture, by John Robinson, Esq., of Salem, Mass. If the welcome accorded to a work is in proportion to the need for it, this should meet with a large and rapid sale, for there is no special work for which there have been so many inquiries as for one on ferns. It is not easy to conceive how this demand could be more acceptably met than by the book in question. While those who cultivate ferns

may not care to give much study to their botanical characters, every intelligent person will wish to know what constitutes a Fern, and how it differs from other plants, all this is admirably told in the chapter on "The Life of a Fern." Abundant references are given to those who would study ferns botanically, and an excellent sketch of the literature of the subject is given. Having long known of the author as a thorough student and successful cultivator of these plants, we were prepared to find in the practical portions of his book the results of experience in the culture of ferns, under glass and out of doors. The work, presented in the neatest possible form, and well illustrated, is creditable to the publishers, the Naturalist's Agency, Salem, Mass. Sent postpaid by the Orange Judd Company for the publishers' price, \$1.50.

A Shirt for 50 Cents—Seemed to us so improbable, that we ordered a dollar's worth of shirts to see what they could be like. Of course, finer shirts are made, but how even such shirts as these are made for so low a price, still remains a problem—we give it up.

Peaches by Mail.—Some six, or more, correspondents have notified us that they have sent specimens of peaches by mail, asking our opinion as to quality, earliness, etc. In no case, *save one*, have these specimens been received. In this single case the ruling is strange enough. The sender properly paid postage on the parcel, as third-class matter. The parcel came to us, marked 92c—letter-rate, the stamps put on by the sender ignored, and the package marked, "non-mailable."—How it could be "non-mailable," when it *was* mailed, and delivered at letter-rates—or why the post-stamps put on by the sender should go for nothing—he confiscated, as it were, are among those things that "no feller can find out." It may be that we shall some day have a postal law that both the people who use the mails and the Washington "powers" will understand alike—until then we must endure with what patience we may.

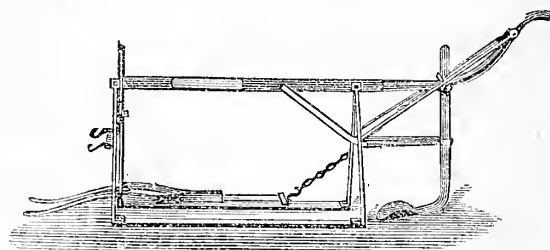
Artichokes for Hog-Food.—A circular from "E. F. Brockway," of Ainsworth, Iowa, offering Artichoke tubers for sale for planting, reminds us that this root is an excellent food for hogs, for which purpose it is now quite extensively grown in some sections; they are more nutritive than any ordinary vegetable, save the potato, and nearly equal that chief of vegetables. Under systematic culture they are easily grown, and yield large crops—even as high as 800 bushels per acre having been raised, and 1,500 to 2,000 bushels per acre yields are claimed in some instances. They are planted like potatoes, in spring, on light dry land, and cultivated the same as corn. Of course this is the plant known as "Jerusalem Artichoke," a variety of which is offered as the "Brazilian Artichoke."

The Best Lamp is what is commonly called the "German Student Lamp," or some one constructed on the same principle. These lamps are made in America better than elsewhere. Mr. Hinrichs says the proper name is "St. Germain." These have a reservoir of oil so arranged, that whenever the oil around the wick sinks so much as an eighth of an inch, a bubble of air enters the bottom of the reservoir and lets down more oil. A lamp flame is fed by oil ascending by capillary attraction through the wick. In the common lamp, as the oil burns away, it has further to rise, and feeds slower, and as the wicks are not uniform, and are often clogged, the light both diminishes and is unsteady. In the Student Lamp all this is obviated; there is a clear, steady light as long as the reservoir holds a spoonful of oil. Such lamps are vastly superior to the light of gas, which, owing to constantly varying pressure, is always unsteady, straining the eyes, even when it is not flickering. As to economy, our "family expense book" shows for the same quarter in the year, that after introducing the Student Lamp through the house, kitchen included, and using Pratt's Astral Oil, bought at the regular price, through the grocer, we had a better light at *one-tenth* the expense of gas. By the way, there is an important addition to the old ball-and-pin valve, in lamps constructed on the above principle. A cut-off is attached to the discharge tube at the base of the reservoir, which also has a catch at the side that not only stops the churning motion but also prevents its being lifted out until it is turned so as to close the discharge tube. After filling and replacing, a quarter turn opens the bottom. This arrangement is safer and more convenient, as it avoids the usual dripping or spilling of oil, and prevents any over-flowing of the wick.

Trimming Lamps—The Best Way, by far, is not to trim them at all. It is very difficult to cut the wick evenly all round, and any portion or point left higher than the rest, gives an irregular flame, if not smoke. All that is needed, is to remove the thoroughly charred portion at the top. Turn the wick up just enough to expose this part, and rub it off with a cloth or with soft paper; the top of the wick will then be even with the fire

line all round. To prevent soiling the lamp or table, the charred part can be pinched off mainly, giving it a final smoothing rub. The dark portion that will not rub off, is quite as good as the unburned parts, and will light more quickly. When impure oil is used, the wick becomes coated all through with dust or dirt; and when this accumulates so as to interfere with the ascent of the oil, a new wick is essential.

A Turnip Topping and Pulling Machine is extensively used in England, where the turnip is one of the principal crops grown on all stock farms. The increased acreage devoted to the crop in this country creates a demand for some simple machine for harvesting it. We reproduce an illustration from the "Agricultural Gazette" (Eng), of one known as "Hunter's Turnip-Topping and Tailing Machine," which is simple in construction, and said to be effective in operation, and is self-acting. "In a neat wrought-iron frame, two saws are fixed to guides, which run on the crown of the turnip, and prevent the saws from cutting or bleeding the root. The whole is hinged to the frame at one end, and fastened by means of a chain to the other, so that the cutting saws adapt themselves to the variously-sized roots. At the back end of the machine, and well clear of the saws, is a cast-steel concave blade or shear, which lifts the root



without cutting, so that by the use of this implement, a crop of turnips and sweeties can be lifted and topped with much despatch. It is also made double." We understand that the machine is not patented in this country, and it is so simple, that any good mechanic, by the aid of a blacksmith, ought to be able to make one.

Caponizing.—"F. E." Sussex Co., N. J. Young fowls cannot safely be caponized after they are 3 months old. When of 6 or 8 pounds weight there is more risk than when they weigh half that. Capons frequently weigh 10 to 16 pounds, and sell for much more than common fowls. For the price of the instruments write to H. H. Stoddard, Hartford, Conn. "Philadelphia dry picked" poultry doesn't come from that city, but from Bucks and Berks Counties, Pennsylvania, and other districts, for which the nearest market is Philadelphia.

Merino Rams.—"W. H. O.," Washington, D. C. It would not pay a breeder of prize Merinos to raise them for \$5 a head. That is about the mutton price for an ordinary native sheep. A good Merino ram cannot be raised for less than \$15 to \$50, according to the breeding value of the stock. The latter price is very moderate for an animal that will add a value of at least one dollar for each of the lambs he may sire—60 to 80, from 50 ewes each year. They can be procured of advertisers in this Journal.

"House Plans for Everybody," by S. B. Reed, Corona, L. I., N. Y. The House Plans which have formed a marked feature in the *American Agriculturist* for the past three volumes, have differed from most such plans in the fact that nearly every one has been subjected to the test of practice. They have not been the ideals of an architect, but represent houses that have actually been built. The work abounds in a great number of practical common-sense suggestions, convenient and useful devices, many of them original ones. Another most useful feature is the estimate of cost, down to the minutest details, so that one may calculate from the price of lumber at any given time or place, within a few dollars of the outlay required. These plans cover such a wide range as to style and cost, that they may be properly designated "for everybody," as the needs of those who can afford only a \$250 cottage are as carefully provided for as those who invest \$8,000 or more in a handsome mansion. There is not only this wide range of prices, but an equally wide variety in styles, and while none are overloaded with ornamentation, costly at first, and more costly to keep in repair, the pleasing aspect of the dwelling is regarded in even the humblest of the designs. The many persons, builders and others who have purchased bound volumes of the *American Agriculturist* solely for the sake of these plans, and all others who wish really practical designs for dwellings, arranged with a view to the comfort and convenience of those who are to live in them, will be glad to know that they have been reproduced in the form of a Book with the above title. The engravings, on the heavy tinted paper, with the careful printing

that can be given to a book, appear to much better advantage than they possibly could in the rapid presswork of the newspaper, and while they form a most useful, they make a really elegant book. There are 40 designs, each illustrated by a perspective view or elevation, and plans for each floor, besides numerous engravings to illustrate details of construction, when needed. All is made so plain by description and illustration, that any one of ordinary mechanical ability can build from any one of the designs. Being "for everybody," it is sent at the low price of \$1.50, postpaid.

Rates Reduced.—Our readers will see by an announcement on page 321, that there has been an essential reduction in the subscription rates of the *American Agriculturist*. This will, no doubt, greatly enlarge our circle of readers, and the editors will spare no effort to make the paper meet the wants of the whole family, however large it be.

"Talks on Manures."—This work, by Mr. Joseph Harris, which was announced some two months ago, will be ready for delivery by the time this reaches our readers. It was stated that one of its most valuable features was the presentation of the elaborate tables of the remarkable experiments at Rothamsted, England. The sole value of such tables consists in their accuracy. The composition and correction of these consumed so much time that it was not possible to produce the work at so early a day as was expected. However, a work on manures is, unlike one upon many other agricultural topics, seasonable at any time, and we feel sure that this will have a hearty welcome from the large circle of readers who have already known the author through his other writings. This is not especially a work on fertilizers, but on manures, in the widest and broadest sense of the term, and its teachings, while in accordance with the established facts in science, are divested as far as possible of technicalities and of all show of what the Deacon would call "scientific larnin," but are conveyed in that pleasant, colloquial manner which his "Walks and Talks," and "Talks on Crops" have made familiar to so many. Where pleasant reading and sound teaching are so happily combined as in the present work, it can not fail to be widely useful in its effects upon farm practice. Pages 354. Sent by mail for \$1.50.

"Winter Greeneries at Home."—Just as shorter days and cooler nights remind us that preparations for our "Winter Greeneries" must soon be made, here comes the needed work in the very nick of time, to tell what to do, and how to do it. The author, the Rev. E. A. Johnson, D.D., of Allegheny City, Pa., has not brought together all he knew, and all that he could find that any one else knew, in one promiscuous and confusing jumble, and called it "Window Gardening," but has given an account of his own "winter greeneries," and told it all so pleasantly and plainly, that they must be indulged who cannot follow in his steps to something like his success. "Attempt only what can be done well," is not enjoined anywhere in the work, that we recollect, but that is the idea that pervades it. There is nothing advised beyond the reach of those of moderate means, and whoever will follow his simple teachings may hope to attain a success approaching the author's own, as shown in the fine illustrations of his beautifully "embowered study." The title of the work conveys his method; green in the form of ivies and other climbers, green in the trailers and droopers, green from above, green at the sides, green in graceful ferns, and quaint forms, green—cheerful green of various shades make up his "winter greeneries." Following Nature, he establishes the ground work of green, and then, following the same excellent teacher, lights it up with bits of color, in the way of bloom, which are all the more effective for their setting of green. Then he does not thrust a whole florist's catalogue at one, but in his selection of "Winter Bloomers" judiciously points out the few plants that one may have in a living-room—for the greenery is to be for and with the household—and with any fair treatment give flowers in winter. Having been over much of the same ground in the management of house plants, we feel sure that the author is as safe a guide as he is a pleasant one. And we are glad that we have in "Winter Greeneries at Home" a work that will do much towards encouraging and increasing the culture of house plants, by showing the beginners how to begin. The work is handsomely illustrated, with views of the winter greeneries at home with the author, and engravings of the various ways and contrivances that his experience has suggested. While eminently practical, the work is handsome enough for a "gift book," and is sent by mail, postpaid, for \$1.

The Massachusetts' Horticultural Society deserves much credit. If it is one of the oldest societies of its kind, it is also the most active. It gives us its "Transactions" for the first half of the year 1878,

by the time the second half of the year has fairly begun. The essays read at the meetings, and the discussions to which they gave rise, are of interest, and that interest is not decreased by their prompt appearance in a neat and carefully prepared volume. Much credit is due to the present Secretary, Robt. Manning, Esq.

Basket Items continued on page 353.

Sundry Humbugs.



If one fraud has been more thoroughly exposed than another, it is Clark & Co., "Claim Adjusters." We began to show their methods, under various aliases, last year, and there has been scarcely a month this year in which some new phase of their operations did not call for a new warning. Besides this, Clark & Co. have become so conspicuously notorious that the daily papers have taken them up, and if there is a concern that has been widely advertised—after a fashion—it is this. Yet Clark & Co. are good judges of human nature; they know that but few people, in proportion to

the whole number, read, and of those who do read, a very small proportion recollect what they have seen for any length of time; they also know that a large share of mankind feel flattered at being addressed personally, by letter, and if this letter contains a tempting bait, in which the hook is cleverly concealed, they stand a good chance to get some bites, so this remarkable firm of

CLARK & CO. STILL CONTINUE

to send out those nice letters asking, "Is this your signature?" and will continue so long as it pays, or until some one who finds that he has been wronged, will visit New York and enter a complaint. This is very unlikely to happen, as the letters are, as a general thing, sent to persons living at a great distance. It is very amusing to see how particular many are to request us to be sure to return Clark & Co.'s letter which they have sent for our inspection, while they know that they have invested in neither mining stock nor jewelry speculations, feel that there is just a possibility that something may come of it, and wish the documents returned. If these persons knew that we have received *bushels* of these Clark & Co. letters, they would not place much value on theirs. ... That remarkable

AMERICAN AND EUROPEAN SECRET SERVICE CO.

is not the Co. we should like to employ on any "secret service," as the managers, or whoever run the concern, do not know the members of their own force. Imagine the surprise of a business man, the head of a large agricultural implement house in Missouri at receiving such a communication as this:

"Dear Sir—As we consider you one of the best detectives on our force, we desire to publish your picture in our paper, and also give you a favorable notice, for which we will charge you only \$10—the actual cost of engraving, the notice being FREE. Write at once."

Then follow requests for photograph, biographical sketch, etc. No wonder our Missouri friend requests us to "warn the public of these frauds," which we have been doing for some months. The scheme seems too absurd to succeed, yet has no doubt trapped many.

THE VALUE OF ANY SECRET SERVICE

depends upon the skill of the agents, and the fact that they are *not known* to be agents or detectives. Yet this so-called Company has been appointing "detectives" right and left, the chief condition being that each shall subscribe to, and send \$3 for their paper—the rest being all promises. Now, they appeal to the vanity of their dupes in this picture dodge, and will no doubt get many a poor fellow's \$10—who has not sense to see that publishing the portrait of a "detective" is the greatest possible absurdity. ... Those chaps in Calais, Me., still send out letters informing the recipient how his name was obtained. "Returning from our mine,

WE MET A GENTLEMAN ON THE CARS

from your locality, and we asked him to give us the names of some persons who might take an interest in mining," etc. This accompanies a circular showing "How Fortunes are made in Mining," accompanied, of course, by offers of the stock itself, "if applied for at once." The number of times these people returned from the mines, and the number of "gentlemen" they met in the cars are beyond computation. Common-sense people

will ask: "If such fortunes are to be made in your mines, why don't you make them, and not spend time and money in writing and sending such transparent stuff as this 'gentlemen on the cars'?"

THIS SEMINOLE GOLD AND SILVER MINING COMPANY, whose proprietors are always meeting "a gentleman on the cars," is not very definitely located; the circular says it is one day's ride from the Union Pacific Railroad in Wyoming Territory. —The "Carbon County News" Rawlins, Wyoming, (see "N. Y. Tribune" Aug. 13, '78, p. 5), has very decided opinions as to this mining scheme, and others like it. We advise all who contemplate investing in these mining schemes to either visit the locality—if they can find it—or write to the above named journal for a copy giving its views of the mines. The Wyoming people complain that schemes like these interfere with the development of the real mineral riches of the Territory.

DO HUMBUGS, LIKE COMETS,

have their periods of reappearing? This would seem so from the fact that every now and then a very old one, that we had quite forgotten, comes around as new.

We infer from our letters that there is a revival of

THE TREE COTTON SPECULATION

in some of the Western States, as we receive inquiries as to its culture and yield, and how long after planting a crop may be expected. During the war, when cotton was at its highest, there was every inducement to raise cotton in the Northern States, and every thing that promised to be of value was tried. Some samples of "Hardy" and "Tree Cotton" were brought us by gentlemen who could have no motive for swindling, claiming that they could be profitably grown in all the Middle States, but these gentlemen were mistaken, and their well intended trials, like the numerous swindles to which they gave countenance, all alike ended in failure. We advise our inquiring friends to first try two or three plants, before they bother about the yield per acre.... The "Butter Compound" business in Massachusetts seems to be remarkably quiet, but we hear of another

BUTTER COMPOUND FROM OREGON,

the old Ohio concern, which we supposed dead long ago. A citizen of Oregon, who, misled by the claims and plausible offers of the "Company," took the agency, now sends us all the documents, agreements, etc., and asks us to publish the concern as

"THE GRANDEST HUMBUG OF THE AGE."

We have been publishing this as a humbug these many years, and are glad that there is one less "agent" for the sale of the vile stuff.... A friend in Seward Co., Neb., writes: "A great many persons here are investing in — & Co.'s (Wall Street)

"SO-CALLED COMBINATIONS,"

and begs us, if we have any more light upon the subject, to let it dawn on them. We have said in these columns all that can be said. We can not point out one single concern and say, these are frauds, but we can say, as the opinion of the best business men in Wall street, as well as out of it, that all these parties who send out tempting circulars, are in bad company, and that the business—even if honestly conducted—is full of such risks as no one of moderate means should run. It is really a game of chance, having all the fascinations of other such games, and the player is pretty sure to lose in the end. There are, in Nebraska, as elsewhere, certain persons who are on the lookout for a chance to acquire riches by some unusual means. Such persons, when they get a few dollars ahead, are not happy until they can get rid of them in some lottery, or some mining or Wall St. scheme, and the more extravagant the claims put forth by these, the more readily do such persons fall into the trap. Warnings are wasted upon such, and it is only those who can stop and think that we can hope to benefit.... An Arkansas subscriber complains that his neighborhood is

FLOODED WITH LOTTERY CIRCULARS,

and thinks it suspicious that the documents are mailed in New York City in a sealed envelope, to be answered at New Haven, Conn., while the lottery is to be drawn in Cuba. Our Arkansas friend doesn't know the "ways that are dark," taken to avoid the vigilance of the Post Office officials. But what are the New Haven officials about, that lottery tickets can be openly advertised from the City of Elms?....

SWINDLES UPON FARMERS,

especially in the way of introducing new implements, continue to be reported; these, a few years ago were more frequent in New England than elsewhere, but a case given in a recent "Ohio Farmer" shows that these chaps have taken the advice to "go West." It is the same old story. Two glib-tongued chaps call upon the farmer, and at once make friends. They find it a pity he should work so hard for a little profit, and show how he may essentially add to his income by taking the agency for their machine. They, after much talk, persuade him to sign a contract to act as their agent, and

depart. In a few weeks the farmer learns that there is a large lot of machinery awaiting him at the railroad depot, and he gets a notice from a neighboring bank that his note for a certain amount is due. In a case in Butler Co., Ohio, a farmer found that he had signed an order for "twenty Marsh's Improved Corn Shellers," when he supposed that he only agreed to act as their agent, and to receive a corn-sheller free. This and other cases of frequent occurrence add force to our injunction.

FARMERS, BE CAREFUL WHAT YOU SIGN!

It should be added that the real makers of the implement, Marsh & Co., knew nothing of the operations of the swindlers.... Recent readers of the *Humboldt column* can have little idea of the extent to which the

COUNTERFEIT OR "QUEER" MONEY

business was carried on 10 or 15 years ago. Those who have the back volumes, will find that we often warned our readers against 10 or 20 dealers each month. The whole thing, as explained in full in the former volumes of the *American Agriculturist*, affords a remarkable and curious chapter in the history of crime. Of late, we hear of these dealers but rarely, and they seem to be more cautious than formerly. The latest is from a chap in New York to a lawyer in Nebraska, informing him that he got his (the lawyer's) name, from the book of a former dealer, and that if he is in want of such money now, the writer will give him, "the name of a *bonafide* dealer from whom you can obtain the money of the *finest kind*." * * I make a small commission on goods sold to customers whom I find.... This is in quite strong contrast to the bold game played a few years ago, making appointments at obscure hotels, and threatening the one who receives the letter with death in case he betrays the writer. It is a satisfaction to know that we have done our share in breaking up this rascally crew.

MEDICAL MATTERS

appear to have succumbed to the "heated term," and but a single novelty, or rather old thing in a new shape, has turned up during the month. This is a pamphlet on

"ELECTRO-VOLTAIC AND MAGNETIC

Belts, Bands, and Appliances for Self Cure," which is one of those pernicious publications, ostensibly intended for the benefit of young men, but really calculated to work upon their imaginations and excite their fears; having convinced the unfortunate reader that he is in a bad way, he is ready for the assurance that his only hope lies in the application of this electric concern. Our views of these so-called electrical appliances were given a short time ago. In brief: electricity *may* be a useful agent, but it should be applied under the advice of a physician, who is *present* to examine and prescribe. Many of the electrical appliances, though they have a "scientific" look, are utterly useless, being at most a series of closed circuits, which pass no electricity into the body, and all the good they do is in acting upon the imagination of those using them.

Successful Strawberry Culture.

Mr. Eli Beard, of Rockland Co., N. Y., has been, and is remarkably successful with strawberries, and many who have seen his patch, have asked him for his method of culture. Finding it a task to reply to the applications, he has concluded that the most direct way of reaching everybody, is to have the account published in the *American Agriculturist*. Mr. B. writes:

"The plants are set in rows 20 inches apart, and 10 inches apart in the rows—the earlier in the spring the better—and cultivated in the usual way the first and second seasons. After the fruit has been gathered the second season, between the first and middle of July, the vines are cut close to the ground; new plants will appear soon after the cutting. In the following September, the old roots, which have become dead and are of a dark color, are removed from the vines, being careful not to disturb the new and living ones. Late in the fall, before the ground is frozen, cover the plants with from two to four inches of coarse littery manure. In the spring, after the ground becomes settled, remove the coarse manure from over the plants and fork it into the soil between the rows; cultivate, and remove the weeds from time to time, keeping the runners cut off and not allowing them to occupy the space between the rows. After the blossoms appear, mulch thoroughly. My plot is about 40 feet square; it was planted seven years ago. The above method of cultivation has been strictly observed; the product has increased every year up to the present, both as to quality and quantity. Two years ago we picked from the plot over 30 bushels; since then we have not been careful to measure or estimate the yield, but are confident that not less, but probably more fruit has been produced. After the second year, the vines run together, making a continuous solid row, which is from 4 to 6 inches wide on the ground."—[Mr. Beard's method is a modification of what is known to cultivators as the

"Matted Row" culture. He attributes his success to: 1st, clean culture and an abundance of manure. 2d, to cutting off the foliage after the fruit is gathered—an old method, about which cultivators do not agree. 3d, the removal of the "old roots," which we judge, from his description, are the under-ground stems of the plants, with the sort of bulb made by the hardened bases of the leaf-stalks. In this way he secures a thorough renewal of the plants each year, and by having highly enriched soil for the new plants, he gives them the best possible chance. Mr. B. says, that originally there were the Wilson, Green Prolific, and two others, the names of which are lost, but they are now thoroughly mixed.—Eds.]

Some Bee Notes for September.

BY L. C. ROOT, MOHAWK, N. Y.

In most localities, all surplus honey boxes should be removed from the hive before this date. The practice of leaving boxes upon the hive until late in the season, should be avoided, as they become soiled by so doing. All unfilled boxes should be removed as soon as the yield of honey is over, and packed away for the following season's use. Combs containing honey in partly filled boxes, may be taken out and the honey drawn from them with the extractor, and the combs used for guides in boxes next season. If single-comb boxes are used, the honey may be extracted without removing the combs.

MARKETING HONEY.—Where but a small amount of surplus honey is secured, it is usually best to dispose of it at a home market. It requires less attention in packing, and, as a rule, will bring a better price. Large quantities will necessarily be shipped to a city market. The provision of a proper package for transportation is essential. For box honey the shipping-case should hold from 10 to 25 lbs., and may be neatly made as follows.—The size will depend upon that of the boxes to be packed;

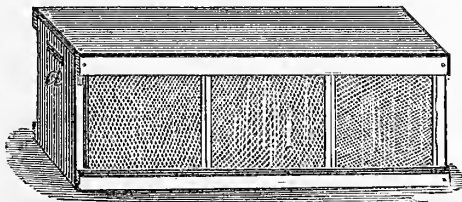


Fig. 1.—BOX FOR SHIPPING HONEY.

basswood lumber is most suitable: Cut two pieces, $\frac{3}{4}$ or $\frac{1}{2}$ in. thick, of proper dimensions, for the ends. At equal distances from the ends, and about one inch from one edge, cut a hole $\frac{1}{2}$ in. deep for a handle, as at *a*, figure 1. A top and bottom, and four strips $1\frac{1}{4}$ wide, an of $\frac{1}{4}$ or $\frac{3}{8}$ in. thickness, according to the size of the crate, constitute the remaining material of the case. Nail together, as shown in engraving. Before packing, boxes should be nicely cleaned from propolis, and care taken in every way to place the honey in market in a neat and attractive package. The boxes which each case is to hold should be placed upon the scales and weighed before packing. With a little care in selecting boxes, fractions of pounds in a case may be avoided, which is desirable. The net weight should be neatly marked on the case.

EXTRACTED HONEY.—The quantity of liquid honey placed upon the market is increasing each season, and finds ready sale in nearly every style of package, from jelly cups to casks holding 500 lbs. If fruit cans are used, let them be of some standard make, and pack them in crates of twelve each, as shown in figure 2. Each can should have an attractive label, indicating the quality of the honey. For the past few seasons we have shipped largely in tin cans, holding 10, 15, and 20 lbs. At present the demand is for casks, or firkins, holding from 150 to 200 lbs. Such casks should be well made, and bound with wooden hoops, which should be nailed in place, and the casks well coated with bees-wax, inside, before filling. To do this, they should be allowed to stand in the sun until they are quite warm. The wax should be applied quite hot. Pour a quart into a cask, and cork up tight, then roll and turn it, until every spot is touched, when the melted wax may be poured out. The warmer the cask, the hotter the wax, and the quicker the work, the less wax will be required. Avoid filling the casks too full with cold honey, for if allowed to stand in a warm place, the honey will expand, and cause the casks to leak.

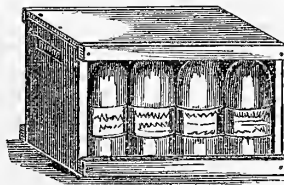


Fig. 2.—HONEY IN CANS.

PREPARATIONS FOR WINTER.—All openings at the top of the hive should be closed so as to keep the interior

warm, which will tend to continue breeding later in the season, and thus aid in securing a larger number of young bees for winter. Combs of honey from the heaviest hives may be changed for light ones in less prosperous colonies, and each thus have a sufficient quantity of food for winter. Each hive should contain about 25 lbs. of honey. Avoid exposing honey, whereby robbing may be induced. Where few hives are kept, the different operations may be performed morning and evening, when the bees are flying less freely, and robbing will be less likely to occur.

HONEY YIELD.—From the hive mentioned in August Notes, honey has been taken as follows: July 12, 45 lbs.; July 20, 106 $\frac{1}{4}$ lbs.; July 26, 50 $\frac{1}{2}$ lbs.

NO PATENT.—I am receiving letters frequently which complain that unscrupulous parties in various sections of the country are endeavoring to collect a fee for the right to use the New Quinby Hive. One individual in Seneca County, N. Y., claims to have secured a patent upon it, after it has been before the public ten years. I wish to state that all such claims are fraudulent, as all of Mr. Quinby's inventions were given to the public *free*.

Harvest Home Picnics.

The successful gathering of the harvest signalizes the most joyous season of the farmer's year. It is the fruition of his hopes, and the reward for his labors. In many other countries the occasion is celebrated in various appropriate and interesting ways. "Thanksgiving Day" in America partakes of this character, and is especially endeared to the New England heart, but we need something nearer harvest time—a festival which can be held out of doors, while the fields and woods still are fresh and green. In short, country people need a Harvest Home Picnic, not necessarily at the drawing home of the last load of ripened grain from the fields, or of fruit from the vineyard or orchard, but sometime in August or September, to celebrate the gathering of the harvest, and express our thankfulness for the gracious gifts we have received. And when with pleasure-taking is combined some other good object, the occasion may be one of visibly lasting benefit. Such an affair was a church picnic and festival the writer had the pleasure of attending about the middle of August. The little country church had a small debt, which its honest people wanted to pay. So some bright woman suggested, and it was decided to combine a picnic, a fair, and a harvest home festival, in one. A gentleman loaned his splendid farm, and had a fine grove cleared up and the many natural attractions of the place put in order for his visitors, employing all his spare hands in the work for some days. The creek was dammed for boating, and a "Cruise Island" and rustic bridges made. Evergreen arches adorned bridges and paths; a beautiful natural bower was formed by clearing out the rubbish about a giant but fallen willow, and seats were constructed here and there through the grove. Simply painted signs on plain boards indicated the various localities. One neat banner of white cloth gave the programme; another had the words "Harvest Home Picnic;" a third, "Faith, Hope, and Charity—the greatest of these is Charity." Then the company came—villagers, farmers, and city visitors. Tents were pitched over tables, from which sandwiches, cake, coffee, ice-cream, and confectionery were sold. The gypsy tent was unique; on the ground were displayed various trinkets of woman's handiwork for sale, and not the least attractive were the gipsies in quaint and pretty costume; outside was a veritable gypsy cart, and a pot hanging from a crane over a smouldering fire. Flower girls spread their tempting wares in the shade, near the "Bower." "Rebecca at the Well" was dressed attractively; the well—a big milk can partially sunk in the ground, and surrounded by rocks and ferns—dispensed lemonade to the thirsty crowd at "only five cents a glass." Games—such as an apple race, a sack race, a foot race, and a tub race—and the ascension of fire balloons made fun for the people, and brought prizes of ice-cream and lunch for the winners. A mock art gallery and a lace maker were among the novelties. One of the marked attractions was horse-back riding by a young lady of the farm, with her instructor. They each drove a "tandem," and made their well trained horses pass through pretty evolutions and perform various feats. These exercises called to mind the good old times when ladies generally rode so much and so well, and brought the wish that the many country girls who have the opportunity would engage more in this graceful, as well as healthful, pastime.—The net receipts were considerable, helped along by a small admission (10 cents) to the grounds; and best of all, the day was delightful, everybody had a good time, none felt bored, and when sundown came, many felt sorry that the day was done. Some enjoyed a social party in the evening (which helped swell the proceeds), and had a pleasant drive home by moonlight. Altogether it was a day and a programme that might be copied—at least in its outlines—to the pleasure and profit of many a country town.

Railways of the World.

INTERESTING FIGURES.—According to statistics recently published at the beginning of 1877, there were 184,002 miles of railway in the world, distributed as follows:

United States.....	74,095 miles.	Egypt.....	975 miles.
Canada.....	4,200 miles.	Rest of Africa...	544 miles.
Argentina Repu'e.....	990 miles.	Total in Africa...	1,519 miles.
Peru.....	970 miles.	In Australia.....	1,921 miles.
Brazil.....	836 miles.	Sundry.....	20 miles.
Rest of America, 2,329 miles.			
Total in America, 83,429 miles.		Total in World ..	184,002 miles.
Germany.....	17,181 miles.		
Great Britain.....	14,791 miles.		
France.....	13,492 miles.		
Russia.....	11,555 miles.		
Austria.....	11,852 miles.		
Italy.....	4,815 miles.		
Turkey.....	960 miles.		
Rest of Europe.....	13,781 miles.		
Total in Europe, 89,490 miles.			
India.....	6,527 miles.		
Rest of Asia.....	1,162 miles.		
Total in Asia.....	7,689 miles.		

[Estimating for the increase since the above tables were made up, the present length of constructed railroads is believed to be 205,000 miles; and adding for double tracks, switches, stations, etc., the total length of track is estimated at over 256,000 miles.]

The total cost is given at \$16,313,500,000, of which \$10,386,000,000 is allotted to the 89,490 miles in Europe, (\$116,135 per mile); and \$5,927,500,000 for the 94,592 miles in the rest of the world. In last month's *American Agriculturist* we gave the cost of the railroads in the United States as \$4,568,597,249. (\$61,659 per mile), which leaves \$1,358,902,752 for the cost of the 11,152 miles outside of Europe and the United States, (or about \$122,000 per mile). The average cost of all the World's Railroads is about \$83,700 per mile. The total value of the Real and Personal Property of the United States, for 1870, was \$30,068,518,507, or less than twice the cost of the railroads of the world. It will be seen that $\frac{7}{10}$, or two-fifths of the railways of the world are in the United States. It is only 53 years since the first railroad was opened to traffic (the Stockton and Darlington in England, Sept. 27, 1825; and only 23 years ago (in 1850) there were only 18,600 miles of railroad any where. There were, therefore, 165,492 out of the 184,002 miles built during 26 years, or 6,323 miles a year, or over 20 miles for each working day. Reckoning an average of 25 pounds of iron to the foot of iron rail, the 256,000 miles of track requires 67,584 million pounds of iron (67,584,000,000 lbs.); or to help the conception, say 1,535 pounds for every man, woman, and child, in the United States (reckoning them at 44 millions.) Yet this amount would make little impression upon the vast stores of iron provided in the bowels of the earth, or in a small coating of its surface. (The specific gravity of iron is about 8, making the weight of a solid foot 500 lbs. The 67,584,000,000 lbs. of railroad iron would make 135,168,000 solid feet of iron, or a mass about 514 feet every way). What will be the figures, when the rest of North America, South America, Asia, Africa, Australia, and the larger ocean islands are supplied with the railroads that can be profitably built and used. As all railways have ties about 7 feet long, and averaging, say one to every 24 feet, some of our arithmetical readers may find amusement in estimating the amount of timber required, the amount of ground to grow it, the necessary amount to be constantly growing, if the ties require a renewal once in seven years, on the average, with no new railroads.

A Farm Order with the Right "Ring."

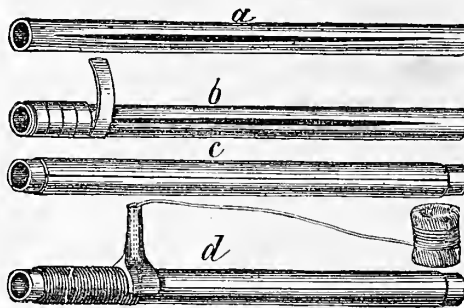
A New York gentleman, carrying on extensive business, owns a large farm, to which he goes with his family during the summer. There are many workmen employed, who are under the immediate care and direction of the Head Farmer, or Superintendent. Our friend finds among his files, the following order issued by the Superintendent, on March 23d, last. It has the right ring—is firm, but conciliatory and stimulating—of a kind that a general would issue to men going into battle; and were not these men going into a real battle? With such a leader, and imbued with the spirit of the order, they will conquer themselves and their bad habits, and the results will show a balance on the right side when the season's work is summed up. We solicited a copy of the "Order," and here it is:

"Now, we are going to start on full time, and perhaps for the season; that will depend upon circumstances. In the first place, I want every man to take good care of tools, and keep them in their places when not in use. Next, be on hand promptly to commence work. Next, he always sure that it is time to quit, before leaving your work. Never stand listening to somebody telling yaras in working hours. Despise tattlers; let us have peace, and with that industry. Never be found watching the

overseer, but let your work show that you have been busy in the absence of your overseer. Let us try to have it said of the men 'Only see the amount of work done for the number of men.' Also, so conduct yourselves, that I can say to the proprietor, 'We have a choice lot of men.' This I can do with a good will, if you do so conduct yourselves; if not, I cannot, and you will lose your jobs. So all this, you see, is for your own interests, and if you will not study your own interests, I cannot be expected to."

Repairing Water Pipes.

When water pipes are burst by the frost, it is easy to repair them in the following manner. The break is usually as seen at *a*, and is caused by the expansion of the water in the pipe when freezing. In repairing such a break in a lead pipe, first bring the edges near together by hammering, then scrape the surface around the broken part, and solder it; or the piece may be cut out, and a new piece inserted. But for iron pipes, and for lead pipes, when it is not convenient to solder them, a different plan may be followed. A strip of stout canvass soaked in a melted cement, made of pitch and brick dust, is wrapped around the pipe, as shown at *b*, until the injured part is covered, or a piece of sheet rubber may be used as at *c*, taking care that the edges do not meet over the break. If the broken edges of the pipe are sharp and likely to cut the covering, file them down. After the wrapping is placed, it is "served" over with copper wire or tarred hemp as illustrated at *d*. A "serving" mallet is used for this purpose; it is made of a piece of wood hollowed to fit the pipe, and with a hole bored through from the center of the hollowed part to the top of the handle. The wire or hemp is passed through the hole, and as the mallet is made



MENDING BURSTED PIPES.

to rotate around the pipe it lays the cord or wire in an even coil upon it. The wrapping may be laid tightly by pressing upon it as it enters the handle of the mallet, or by twisting it once around the same as it comes from the ball. When it is firmly bound, the end may be fastened in any secure manner, and the whole covered with a coating of the pitch and brick dust. These directions will apply to all sorts of pipes where the pressure is not very great; otherwise the wrapping will need to be made stronger to resist the greater pressure.

Report on Insects Injurious to the Cotton Plant.—The Commissioner of Agriculture has appointed Prof. J. H. Comstock, of Cornell University, and Prof. A. R. Grote, of Buffalo, N. Y., special agents to carry on observations and experiments in connection with insects injurious to the cotton plant. These gentlemen, together with several other local observers, who have been appointed in different parts of the cotton belt, will act under the direction of Prof. Riley, the Entomologist of the Department, who has prepared a circular letter of inquiry to be sent to correspondents throughout the South. From this we learn that it is the intention of the Department to make an exhaustive report on the insects injurious to the great staple, and do for the South what the United States Entomological Commission has already done for the West. Such a report, strange to say, has never yet been made, and under Prof. Riley's charge, we have every confidence that it will prove, like his other similar work, full, thorough, and reliable.

A Home-made Wind-mill.

"W. B. W., Mendon, Ill., sends a description of a home-made wind-mill. The manner of making it is as follows: Procure some 2-inch oak boards; saw out a disk (*a*, fig. 1,) about 16 or 18 inches in diameter; make a square hole in the center 2 x 2 inches; bolt the arms to this as shown. These must be of good, hard wood, about 3½ feet long by 2 x 2 inches thick, for an 8-foot wheel. Chamfer off one side, and screw on the cross pieces, *b*, *b*; upper one 14 inches long, lower one 9 inches long. These must be put on at an angle, so as to set the wings diagonally to the wind. To these nail thin pine weather-boards, allowing the ends to extend a

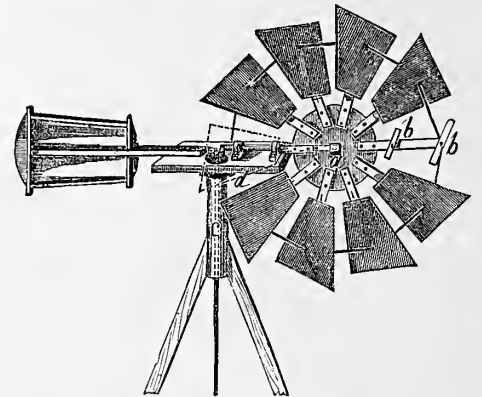


Fig. 1.—WIND-MILL AND PUMP.

little beyond the outer cross piece. After the wings are all bolted on to the center piece, bore a small hole through the end of each arm, and pass a stout wire through and around the entire wheel, taking a hitch around a nail driven in the end of each arm. For the standard or tower, saw out two wheels or disks of wood, making a hole four inches in diameter in each. Place these four feet apart, and nail stout slats all around, making a drum open at both ends, (this is shown at *c*, in fig. 1); four inches from the top of this, at *d*, place a collar, nailing it on securely. Now take a board five feet long, 1½ foot wide, and two inches thick (fig. 2); make a hole in this to fit over the end of the drum on the collar; put another collar on top of this; fasten it securely, and we have the turn-table. To one end of this board put on boxing for the wind-mill shaft (see fig. 2). The shaft for the mill should be of hard wood, shaved or trimmed round, with smooth bearings left for it to work in; but squared at the end, and fastened in the hole in the center of the wheel. To one end of the shaft attach a crank so as to give a 4-inch stroke (*e*, fig. 2); to this attach the pump-rod, which passes down through the drum, as shown by the dotted lines. For the vane, take a 2 x 4-inch scantling seven feet long; mortise the cross pieces as shown in fig. 1; make a frame, and cover with stout canvass or sheet iron. To stop the mill in case of a storm, turn the vane around at a right angle to the wheel, as shown by dotted lines in fig. 2. This greatly lessens the wind-resisting power. The whole apparatus may be held up on a tower by nailing the ends of supports to the drum; or by making a small,

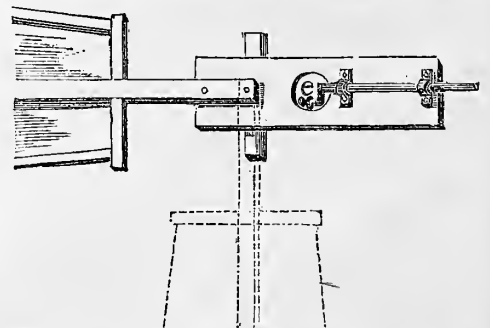


Fig. 2.—SHAFT, CRANK, TURN-TABLE, AND VANE.

square-topped tower, and letting the drum down through a hole. Make a swivel in the connecting rod to the pump, to prevent twisting of the pitman.

What About the "Cow Milkers."

It is very desirable to have some appliance for lessening the disagreeable work of hand-milking. We have been looking and hoping for such an implement more than a score of years as Editors, and more than twice that time as owners of cows. With a drove of cows to milk before and after school hours, when on the paternal farm, we tried to devise something that would draw the milk, especially from kicking and sore-teated animals. Straws, quills, and wooden tubes, with carefully smoothed ends were used, but discarded after one of them drew blood, and a fractious cow ran away with another and pushed it entirely into a teat. A friendly eye and ear have always been turned to those hringing to this office anything that gave the least promise of success. Probably not less than twenty devices have been examined, and we have travelled many a mile to look into and test various contrivances. Some have appeared feasible at first, but continued practical testings have always brought some unfavorable results.

We mention this experience to let it be known that the first party who will bring out a good practical cow milker will have the earnest good will of this Journal, and all the help it can give him. Such an implement, indeed, is one of the great wants of the day.* If seeking new business, we would give more for the patent of a successful, trustworthy implement that would milk the millions of cows than for a machine for any other purpose we this moment think of. From our earliest recollections of farm work, onward, only one more tiresome, disagreeable work comes to mind, viz., raking hearded barley from before an old-fashioned threshing-machine; that capped the climax! We say thus much to stimulate inventors to continue their efforts.

What of the Milkers now in Use?

During two or three years past, sundry tubes have been brought out—hard rubber, ivory, bone, silver, silver-plated; tubes to be used singly, and those united by flexible rubber pipes. They have been tried by three of our Editorial Staff, and by other trustworthy gentlemen. As these have been made so carefully as to seem to be incapable of doing direct injury, and as those of our Staff who have tried them have found them useful with sore teats, have discovered no direct injury in their own experience, and have not been able to say there is a decreased flow of milk from their continued use, we have allowed them to be advertised in the *American Agriculturist*—not with great confidence in their having much value, but partly because of the good faith of the advertisers, partly because they seemed incapable of injury in careful hands, and especially because, being inexpensive, we have hoped a wide trial of them might result in their favor. But we are not prepared to unqualifiedly recommend anything we have yet seen. Some recent reports have come of direct injury, shown by blood, when used by unskillful persons, proving that they can not be entrusted to the ordinary run of milkmen, or milk-maids. Careful, skillful owners are warranted, we think, in having one set on hand for temporary use for badly sore, or cracked teats, and we hope they will secure and personally experiment with them.

An important question is yet to be settled. The natural process is, suction by the calf, accompanied by the pushing, "bunting" motion. Milking by hand partly supplies this natural action. But, will cows generally continue to secrete and yield a full supply of milk, if it is drawn away quietly through milking tubes, supposing it to be always done with care.

*The U. S. Census for 1870 reported 8,935,392 milch cows; the American Cyclopaedia gives for 1874 a total of 10,906,800. There are doubtless at least 12,000,000 milch cows now, (probably nearer 15 millions). To milk 12 million, twice a day, with an allowance of only five minutes for each milking, requires a daily expenditure of time equivalent to 2,000,000 hours, or 200,000 persons to be constantly milking 10 hours a day. Allowing every person who milks at all to have, on the average, 3 cows, not less than four million persons go through the operation of milking twice every day, good cows, and bad, and indifferent. If good milking, by hand even, could be secured continuously, the product would be increased at least five per cent—an enormous sum in the aggregate—to say nothing of unpleasant work, spoiled tempers, and spoiled cows.

Some assert that they will. That is the question now. We are anxious to believe that it will be so, but frankly confess we are yet much in the dark. To settle this question, it will be necessary to have a long continued, thorough trial, upon a considerable number of cows, of known milk yield capabilities—part milked with and part without the instruments, and with such care in feeding, and other items, as to leave no questionable elements to vitiate the results. The trials, to be of value, must be made under the careful supervision of persons of good judgment, and entirely disinterested in any milking-machine, or patent. The Patentees of one or more of these milking-machines, if they have confidence in them, and we are sure some of them appear to be confident, ought to be able to secure such thorough tests. We think the subject of sufficient importance to warrant its being taken up by some State Agricultural Society, or trustworthy Dairy Association. Though not involving a chemical question, would it not be a legitimate work for the Conu. Agr. Experiment Station, for example?—having the trial say on Mr. Webb's farm, under the supervision of Prof. Johnson and his assistants? Other Institutions at the West and South might make similar experiments.

Very Gratifying Figures.

Any farmer, or any business man, who produces and sells more than he buys, is by so much improving his financial condition, provided he keeps up the productive capacity of his farm or business, and does not diminish his stock on hand. The same is true of a Nation. That the productive ability of the United States is increasing, despite some "wearing out of the soil," is evident. Millions of new acres are annually brought into cultivation; and there is also a yearly large increase of live stock, implements, machinery, etc. The statistics of our foreign trade have just been completed for the year ending July 1st, 1878, for the entire country, and they stand thus:

July 1st, 1877, to June 30th, 1878.	
Exports of Produce and Manufactures.....	\$694,884,200
Exports of Gold and Silver.....	33,739,215
Total Exports.....	\$728,623,415
Imports of Merchandise, etc.....	\$437,051,533
Imports of Specie.....	29,821,913
Total Imports.....	\$466,873,446
Excess of Exports over Imports.....	\$261,749,979

That is, during a single year past we have sent \$261,749,979 more to other countries, than we have received from them, and are so much richer, even though the money went to pay up our indebtedness abroad. During the previous year (ending July 1st, 1877), the excess of exports was \$166,539,917, or a total excess for two years of \$428,289,896. During five years, ending July 1st, 1878, the total exports of products, including gold and silver, amounted to \$3,242,634,153, and the total imports, gold and silver included, were \$2,585,415,658; excess in our favor, \$657,218,495, or an annual average of \$131,443,699. This total excess of exports over imports for five years nearly equals one-third of our entire National Debt. An annual excess of exports equal to that of the past year, would in eight years about equal the whole of the National Debt, allowing only for the principal.

Science Applied to Farming.—XLV.

The Ville Formulas and System of Manuring.

Of the numerous formulas for fertilizers for special crops, no others have attracted more attention than those of Prof. George Ville of Paris, whose investigations at the Experimental Farm at Vincennes during the past 25 years or more, have been discussed, and whose writings are read the world over. These formulas form a part of a system of manuring explained in Ville's books, several of which have been translated into English. An early one which covers part of the ground, and includes most of the bad and many of the good points of Ville's doctrines, has been lately republished in the form of a pamphlet, with the title "High Farming without Manures—Six Lectures on Agriculture." Another, later and more complete, is called "Chemical Manures." A third gives a

brief exposition of the system, in the form of a dialogue, and has, I think, been translated under the name of "The School of Chemical Manures."

Ville's fundamental proposition is: "The profit from farming depends upon the quantity of fertilizers given to the land.....Without fertilizers the yield is small, the profit nothing, and the final result loss. With abundant manuring, the yield is increased, and the profit certain, for the excess of expense is but the half or the third of the price of the excess of the harvest crop."

The great problem for the farmer then is to get manure. The cattle he wants and can profitably keep for other purposes will not generally supply enough. More stock will be a burden, and the manure costly. Ville proposes chemical manures instead. In what he calls "The System of Agriculture which ought to Prevail," instead of cattle kept as a necessity for making manure for grain and other crops, he recommends to "buy manure, and raise such crops and keep as much or as little stock as will be most profitable."

The Essential Ingredients of Manures.—"Complete Manures."

According to Ville, of the dozen or more constituents of dung, four—nitrogen, phosphate of lime (phosphoric acid), potash, and lime, which constitute about one-tenth of its weight—are "the regulators *par excellence* of production, and the only ones with which agricultural industry need occupy itself." His formulas for "complete manures" supply these four ingredients, the nitrogen as nitrate of potash (saltpeter), nitrate of soda, or sulphate of ammonia; the phosphoric acid in the form of superphosphate; the potash, in either nitrate of potash, or other potash salts, and the lime as sulphate of lime (land plaster). He says, that "the mixture of these substances has the same properties as dung." The "complete chemical manure is to the barn-yard manure, what the metal is to the ore." "It is farm-yard manure divested of all useless matter."

The formulas which are made for different crops, based not upon the composition of the plant, but upon its assumed capacity for getting its food from air and soil, and the effect of the different materials upon its growth. "Each of the four regulating ingredients has its own functions which are of more or less relative importance, according to the nature of the plant to which it is applied...." No one can do any good without the coöperation of the other three (though if either is supplied in abundance by the soil, it need not be included in the manure.) Give the others, and each has its own predominant action for a certain list of crops.

"Dominant Ingredients."

Ville gives "the name *dominant* to the ingredient which, for a given crop, plays a more important part than the others." Thus:

"Nitrogen is the predominant ingredient for the cereals as Wheat, Barley, Rye, Oats, and for Colza, Sugar beet, Hemp, etc."

"Potash has an especial influence upon Peas, Beans, Clover, Lucern, Flax, Potatoes, etc."

"Phosphoric acid is especially beneficial for Turnips, Ruta-bagas, Radishes, Indian Corn, Sugar-Cane, etc."

"Lime seems to exert no especial preponderating action upon any plant, but is necessary for all."

The practical inference is that in preparing a fertilizer for a given plant, we must reduce the subordinate ingredients as much as we can, and put in a good deal of the dominant. To sustain his propositions, Ville cites a great many experiments; some made by himself in pots or in the fields of the Experimental farm at Vincennes, and others by farmers in France and elsewhere. In an experiment on wheat, for instance, one plot received a "complete manure;" from another the lime (sulphate of lime) was omitted, while the third had no potash, etc.

Fertilizer.	Yield of Wheat per Acre.
Nothing	15.88 bushels.
"Complete Manure,"	56.44 "
"Complete Manure," without "lime"	53.33 "
"Complete Manure," without Potash.	40.44 "
"Complete Manure," without Phos. Acid.	34.66 "
"Complete Manure," without Nitrogen.	18.18 "

The wheat suffered more from lack of nitrogen than from lack of any other ingredient. Again, with sugar-beets, starting with a complete fertilizer which supplied 360 lbs. of superphosphate, 180

lbs. of nitrate of potash, 270 lbs. nitrate of soda, and 360 lbs. of sulphate of lime, per acre, when more lime, potash, or phosphoric acid was added, the yield was not affected, but when the nitrogen was increased, the yield rose with it. From such experiments as these, Ville infers that nitrogen is the dominant ingredient for wheat and the sugar-beet, and consequently he puts a large proportion of it in his formulas for these crops. He insists, furthermore, that the form of combination is important, and uses sulphate of ammonia for wheat, nitrate of soda for sugar-beets, and so on. For clover, beans, peas, etc., he recommends little or no nitrogen, because these plants are found to get very little if any good from nitrogenous manures. He explains this by assuming that such plants get all their nitrogen from the air, and do not need it in fertilizers. Of the theory once held by many, that plants assimilate the free nitrogen of the air, Ville is now almost the only prominent defender. He claims that clover gathers all its nitrogen from the air; that harley and rye get 80%, wheat, 50%, and sugar-beet, 60%, from the air, and the rest from the soil. This assumption, I think, has very little of experimental proof to rest upon. Much more investigation is needed to settle the question.

Concerning the mineral ingredients, phosphoric acid, potash, and lime, Ville's rule is to restore all that the crops remove, and a little more to make up for what is leached away by the water in the soil below and beyond the reach of the roots of plants. In this, he very strangely ignores the resupply which every soil keeps up from the decomposition of the materials it contains.

Ville proposes "complete manures" for all crops, but at the same time recommends farmers to test their soils by experiments, in order to find whether these already contain and can supply any of the ingredients, and if so, omit them from the fertilizer. He lays a great deal of stress upon these experiments, and gives very full directions for making them. Where chemical fertilizers are to be used as auxiliaries to farm manure, he recommends to use the dominant ingredient for the crop; thus, for wheat he would add sulphate of ammonia or nitrate of soda; for corn, or turnips, superphosphate, etc. Ville claims that

Chemical Fertilizers are Superior to Farm Manure

for several reasons: (1) They bring larger crops. In proof of this he cites several hundred experiments made by agricultural schools, societies, and private individuals, on wheat, oats, rye, barley, maize, potatoes, sugar-beets, sugar-cane, etc., in France, Belgium, Germany, Italy, and other countries. In 51 experiments with wheat, in which chemical and farm manures were compared, the chemicals brought larger crops in 47, less in 3, and the same in one case. In 92 experiments with sugar-beets the artificial fertilizers brought the best results in 67 cases, the dung in 20 cases, and both the same in 5 cases. In 32 experiments with potatoes, the chemical manures brought more than horse-manure in 25, less in 6, and the same in 1.—(2.) The chemical fertilizers are cheaper. To substantiate this, he makes extended comparisons between the cost in France of farm manure and the corresponding chemical materials, and calculates that the manure is the dearer by some six per cent.—(3.) Chemicals are always at command, and in just such kinds and quantities as are needed, the only limit being the amount of capital to be in-

vested.—(4.) The ingredients of chemical manures are ready for use at once, while in yard-manure they are slowly available.—(5.) Chemical manures are more easily and cheaply transported, handled, and applied.—(6.) Chemical manures can be divided so as to use for each crop its predominant regulating ingredient, and in each case only what is needed. Thus, in a rotation, nitrogen can be used for wheat or oats, phosphates for corn or turnips, and potash for clover. Or, if the soil supplies enough of any one ingredient for any crop, it can be omitted from the fertilizer and its cost saved.

Continuous Use of Chemical Manures.

To the question whether chemical manures alone can be depended on and used with profit year after year, Ville replies, "Yes, under two conditions: 1st. Give the land in fertilizers more phosphate of lime, more lime, and more potash than the crop takes from it.—2d. Give it about 50% of the nitrogen of the harvest." W. O. ATWATER,

Wesleyan University, Middletown, Conn.



A Flemish Milk Wagon.

A correspondent now travelling in Europe, sends a photograph of the milk cart common in the streets of Antwerp, Belgium, which we reproduce in the engraving presented above. For a dog to draw a cart is a curious thing for many readers, as also is the peddling of the milk from door to door by a woman, but is an ordinary sight in that country. The cans are of the ordinary sort, from which the milk is drawn by means of the dippers, the long handles of which are seen sticking above the sides of the cart.

Oleomargarine.

What it is—What it is Used for—Its Effects.

Though much has been published in the *American Agriculturist* on Oleomargarine, we give the following summary for the benefit of the large class of readers who show by their letters that they are not already familiar with the subject. Oleomargarine is made from the caul-fat of beef animals, by a process and machinery, which separates the fat from the tissues. So far it is clean, and, of itself, as clear suct, is unobjectionable; but some claim that dirty grease, and even refuse hog-fat are also used in the process. Manufacturers claim that it is identical with butter, because both are fat, and come from the same animal, and are similar in composition. A comparison will show the fallacy of this assertion. Oleomargarine consists exclusively of the three fatty compounds—stearin, olein, and margarine. All animal fats, of which butter and suet are chief representatives, are

made up mainly of these three substances, though in varying proportions, and often with additions. Butter is composed of stearin, olein, margarine, butin, myristin, caprin, caproin, caprylin, and butyrin—six extra ingredients which are not contained in oleomargarine; and these extra six constitute something like ten per cent of the butter, and the aromatic flavor and other peculiar characteristics of the butter are mainly due to their presence.

It is claimed that the absence of some of the components of butter make the oleomargarine superior in keeping quality to butter. Be this as it may, it does not make butter of oleomargarine.

Butter is a product peculiar to the udder of the cow, and is obtained by separating from the milk, by churning, the fats which compose it. Oleomargarine is formed in other tissues of the animal, is composed of different ingredients, and is separated by heat and processes which produce a different result. Though chalk and marble have nearly the same constituents, yet chalk is not marble, nor is marble chalk; even so oleomargarine is not

butter. Oleomargarine is then essentially tallow, or other fat prepared by churning it with a little real butter to form a product which has been often sold for butter—now, fortunately, prohibited by law in some States. Oleomargarine quite closely resembles butter in appearance; but it has a peculiar, strong taste—unmistakable after it is once tried—and leaves a sticky disagreeable sensation in the mouth, similar to that caused by greasy soup; this bad flavor can be tasted for hours after eating it. For cooking purposes it may serve as a substitute for poor butter, and may even be used upon the table by those who are not particular in such matters. It makes a pastry, which, though good enough while hot, is very tough when cold. A

very large amount is sold in the markets of the country, for use in cooking and for table use in cheap restaurants, and by the poorer classes. The usual price for this "butter" is 15 cts. per pound. Much is also used in cheese factories to take the place of the cream used for butter-making. The product is sold as whole milk cheese, when not prevented by law or the honesty of dealers; and large quantities are shipped abroad as American cheese.

The effects of such a product in the market are great and manifold, as often pointed out in the *American Agriculturist*: Its low price seriously affects all the lower grades of butter and cheese; it imposes on the public a sham for a reality; it endangers our foreign markets for good dairy products; and all of these will in turn have other and deleterious effects, which any one can trace. The remedy is simple: let every State, that has not done so, by law compel its sale under its own name, and let dairymen combat it in the market, by not making either butter or cheese which can be compared to it, but produce only superior articles, and get the better price they are sure to bring.

Bees, Bee Keepers, and Honey.—The annual convention of the National Bee-Keepers' Association will meet in the Cooper Union, N. Y. City, on the 8th of October, at 12 noon, and a show of bees and their products will be held at the American Institute Fair on and after September 20th.... As to shipping honey, a prominent dealer informs us that the supply of honey now in market, and on its way thither, is so great as to practically overstock the market, which fact should induce farmers to hold their stock for a while.

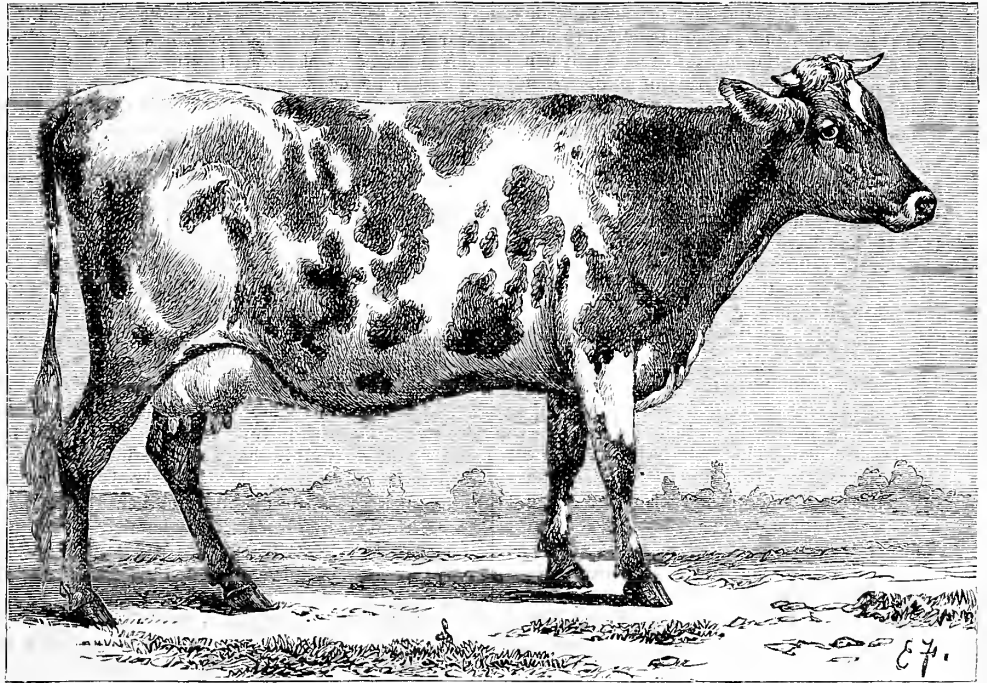
A Norfolk Polled Heifer.

We recently gave a picture of a Norfolk polled cow. Herewith is presented a portrait from one published in the "Agricultural Gazette," (Eng.) of a heifer of this breed: it is Rosebud 2d; dam, Rosebud 1st; sire, Rudham Hero; bred by Mr. Savory of Rudham Grange, England. The breed is attracting considerable notice in that country, and a Herd-book has been established for the protection both of breeders and purchasers, as well as for the preservation of the purity of the breed, which is worthy of introduction and cultivation in America. The dairy interest is growing to an enormous extent, and in its development over greatly differing localities, there is not one really good kind of dairy stock that may not find a place, in which, for certain purposes, or to suit certain tastes, or necessities, it may surpass all others in form and usefulness. That the Norfolk polled cattle desire the high reputation they possess, is proven by the fact that at the commencement of the herd-book, more than seven hundred carefully bred animals were offered for entry. There is but one full herd of them in America—that imported and bred by Mr. Taber, of Patterson, N. Y.—with a few scattered animals in different sections. From the numerous enquiries made concerning them, since our previous illustration, it seems that they are exciting considerable interest. This would be augmented if a few energetic importers of other cattle would turn their attention to these. That such ventures would be profitable, seems to be quite certain, considering the prices realized for Jerseys at every importer's sale. It is not alone as dairy cattle, that this breed deserves notice: the illustration shows that these animals will produce beef as well as milk. The deep brisket, the full fore-quarter, the rounded barrel carrying a full loin, and the general symmetry would not disgrace a short-horn of the first families. To produce good milch cows and excellent beef is sufficient to give character to any breed; but when in addition it has the advantages of being easily kept on moderate pastures and feeding, and being without the dangerous and useless horns, it becomes still more valuable and desirable. With the present outlook

rights, representing 10,000 acres of land, were sold in 1877, and the present year 290 rights were disposed of up to July. As progress is made and experience gained, or better methods are practised, the water is used with more economy, and the breadth of land that can be watered is consequently enlarged. So far, streams only have been utilized,

Cross-Bred Jersey-Ayrshire Cows for the Dairy.

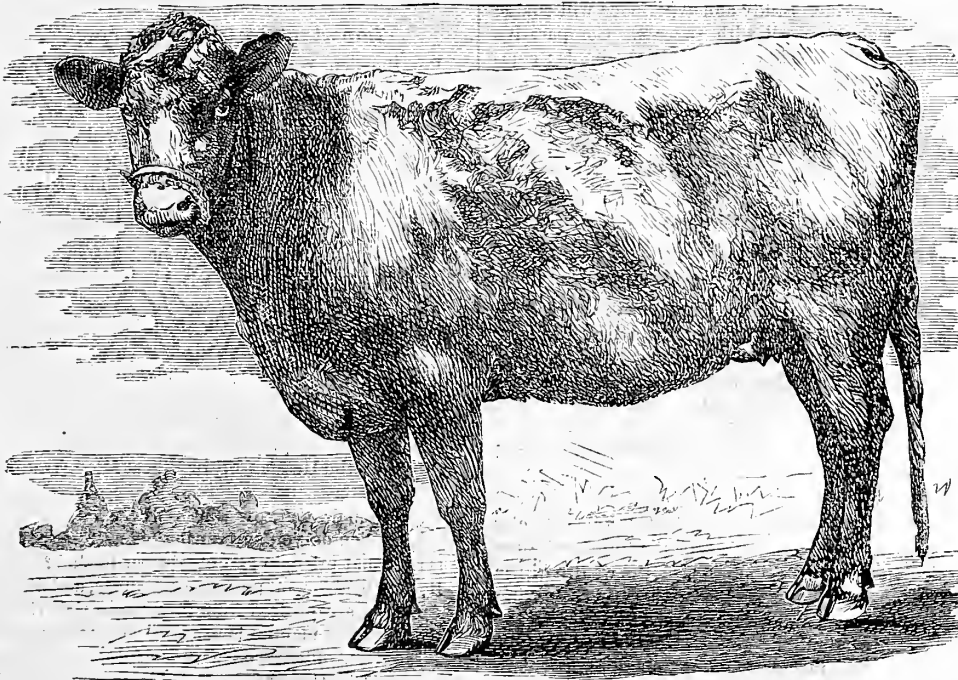
Which is the best cow for farm and for family use? Where the farmer uses his cows for butter making, experience would go to show that the grade Jersey



CROSS-BRED JERSEY-AYRSHIRE.

but it is now proposed to make use of the water of occasional floods by confining it in reservoirs. In this way the supply may be largely increased, and hundreds of farms made in places that are now barren, not only because they are deficient in water for three-fourths of the year, but because they are torn and devastated by freshets, and inundations at other seasons, when the water would be useless for vegetation. It will doubtless be but a short time

is essentially the farmer's cow, a fact widely appreciated. The mark of the Jersey is now noticed on every hand in the beautiful and picturesque colors and graceful forms of the cows seen grazing in the meadows, and dotting the pastures. No other cow is so easily kept, or more docile, or gives a richer return in butter for the food consumed, than the grade Jersey. But something depends upon the cow from which the grade is raised. Unless the dam of the cow is a copious milker, and is able to transmit this quality to her progeny, the principal end sought in the crossing is missed. The Ayrshire is the most prolific milk cow. For large yields, and for easy keeping, she is unsurpassed. To cross an Ayrshire cow, with a well selected Jersey bull, ought to give the best dairy cow that can be readily produced. The large milk yield of the Ayrshire, is united with the large cream yield of the Jersey, and we have all we can procure in one way from the Jersey, multiplied by the excess of the yield of the Ayrshire. Herewith we give a portrait, the first ever published, we believe, of a cross-bred Jersey-Ayrshire cow. This is a young animal, a few days over two years old, but has been milking for five months, and has produced over one pound of butter per day from a little more than eight quarts of milk. She was bred by Mr. Thomas Fitch, of New London, Connecticut, a gentleman who has been experimenting in crossing the Jersey upon every known breed of cow, including the "Sacred cow of India," for over 30 years, and who long ago settled upon the Jersey-Ayrshire as the best cross possible for large yield and rich quality of milk. The cow in question is a white and brindle in color, with a golden yellow skin which shows through the fine short silky hair at every place where white prevails. As a proof of the easy keeping of this class of cows, the original of the illustration has been kept in excellent condition from the mowings of less than half an acre of lawn with two quarts of middlings daily; and upon this feed has been, and is, producing a little more than one pound of butter per day. For so young a cow this performance is worthy of being recorded among those of the many good cows whose portraits have from time to time been exhibited in the *American Agriculturist*. It is evident that this is one of the best cows for the farm and for family use.



NORFOLK POLLED HEIFER.

for an extensive trade in beef and beef cattle, their characteristics will carry much weight in the choice of live stock for both milk and general farming.

Agriculture by Irrigation.—The cultivation of land by means of irrigation is gradually extending in Colorado, California, and other localities. In the colony of Greeley, Colorado. 250 water

before agriculture will call for the services of engineers, to make available the practically unlimited opportunities for impounding water in the mountain valleys, and using it for irrigation. We hear already of such intentions in the valley of the Arkansas, which possesses a supply of water sufficient to convert its present dry fields into gardens for several hundred miles along its course.

Among the Farmers.—No. 32.

BY ONE OF THEM.

When the strawberries were in blossom, and rye not yet in the ear, and when men were getting out the manure for corn, and the shouts of the plowmen were heard all over the land, on a drizzly rainy day, with lucid intervals, and just chill enough to make us feel that grass was the only thing especially benefited, and with the good company of an old friend, Mr. Wells, of Wethersfield, the writer visited

"The Ranch" of James B. Olcott.

This is Wonderland to the readers of the *Connecticut Courant*—a land of mysterious production and of a peculiar charm, not well defined, but real. Mr. Olcott's readers have learned all about the sand barren, and the yellow pines, and scrub-oak woods, and strawberry plantation. They know "Old Ring-bone" and the "Twenty-dollar horse," and the Alderney steers, by reputation at least, and so did I. Now, to understand both the man and his home, needs a long acquaintance, and the affection engendered of it, but I may be allowed to say to the readers of the *American Agriculturist*, that Mr. Olcott is a reformed Californian. That is, he has had the desire to wander and see the world, and the rough and savage, as well as the smooth and placid waters and ways of life, and then, ten years ago, settled down upon his native sands. He believes that a man as is a man, can get a living, and a home, and home comforts—and that includes fruit from June to June—as well as everything else that a regenerate wanderer is naturally heir to—home, joy, peace, meat and vegetables, especially if his heart is full of the milk of human kindness, and his stables of Jersey cows—provided he goes to work the right way, on almost any kind of soil.

Well, we caught him at home, or he caught us, and no Tartar either way. He had big boots of rubber or well-grained leather, which furnished us for a tramp through the wet grass; and we inspected the strawberries, the grass land, the big patch of sand-barren he was reclaiming with 40 or 50 loads of beautiful leaf and stable-manure compost to the acre, the low woods which were annually robbed for the leaves, and many other interesting things. We inspected the house of his own planning and building, with the dairy and stables adjacent, which are quite too close for any but people who love neatness and hate ill odors; and we partook of a frugal lunch, served by the gentle house-mother and her daughters, and seasoned by kindly welcome and instructive talk.

Mr. Olcott built his house with much of Donald Mitchell's sentiment, for a combination of the useful and beautiful—that is, making beauty a thing of use, and useful things graceful and fair; and so he carries on his work, a useful sentimentality pervading both his composts and his letters. It is framed into his buildings and recognized in the width of his doorway and the breadth of the grass-plot, in the weedless garden, in the kindly whinny of Ring-bone, and the contagious laugh of the proprietor of the "Ranch."

One thing surprised us, there was less of what one may call sandy-land farming—that is, plowing in of green manure crops, agonizing after organic matter in the soil (which is always disappearing), and the use of crops known to flourish in light soils, like cow-peas, for instance. Manure from the barnyard, which was really one great compost-heap, is Mr. Olcott's dependence for crops of all sorts. The supply of this is augmented in every possible way, but chiefly by leaves from the woods. This robbing of the woods checks their growth in a great measure. Yet we may surely take our choice, when we have it, between promoting the growth of timber, and increasing the yield of corn and fruits.

Treatment of Ailing Animals.

If there is any one thing which gives a real distress to a humane man, it is sickness and pain in a dumb brute which he can not alleviate. If his children are sick, he or his wife, or the good grandmother, has knowledge and nostrums which are administered with some confidence—"simples"

which are useless and harmless, or possibly beneficial. If these fail, they usually have near at hand

"The Village Doctor,"
Whose ancient sulky, down the village lanes,
Dragged like a war-car, captive, ills and pains."

If, however, the animals are sick, we have no one to turn to—cow-leeches and horse-doctors, blacksmiths and stable-boys, whose tender mercies are cruelties, are always ready to physic and purge, to sear and torture, with "every thing and device they can think of,"—nauseous mixtures, the very enumeration of whose ingredients would be hardly fitting matter for these pages, if no important good were to be gained by it. So the poor things suffer, and get well in spite of us, or they die in agony while we stand by helpless. This state of things is all wrong, and might and must be remedied.

Veterinary Surgeons.

The number of educated veterinarians in this country is very small; they all find employment in or about our large towns, and as a rule are a very respectable class of practitioners. To them, however, whenever we can, we confide the treatment of our live stock; but not one farmer in 10,000 can do so. We have two or three veterinary schools which are struggling with poverty or lack of appreciation, and would do well if they each graduated a score of practitioners a year. Medical schools for training human physicians abound, and their graduating classes number hundreds. Every hamlet, almost, at the East, and every village in the Middle and Southern States, has its educated physician; while throughout the Western States they are numerous, and within reach everywhere in civilized regions. Nine-tenths of them are making no more than a fair living, and many are failing to do that. Other professions and callings tempt them from their own that they may get better pay. Not that they do not love their profession, nor that they are not qualified to practice it, but it will not support them.

Why Should Not Physicians Treat Animals as well as Men?

If a physician has all he can do to treat ailing humanity, certainly the animals must be neglected; but when, as at present, the "doctors" are making a poor living, or none at all, what should prevent them from treating the animals? Nothing hinders but a false pride. Study and experience will enable any physician to do it with success. Comparative anatomy is studied in all our medical schools; comparative pathology should be. The knowledge of animal diseases is of great service to a physician. In fact, man and animals are found to have so many diseases in common, that animal pathology is quite essential to reasoning upon, and treating many of the ills that man is heir to. Were it to become a general custom among physicians to treat animals, and to charge for it, we might confidently anticipate the

Most Gratifying Results.

These, or some of them, I venture to enumerate. First, the physicians would make a better living; besides, they would at once become more important to their constituencies. Second, the country would have a corps of efficient observers, on the watch for infectious or contagious diseases among animals, and quick to detect and report upon unusual animal diseases of any kind, whenever they might break out, thus providing an efficient safeguard against their spread, and against filling our city markets with diseased meat, or the killing of such for country consumption. Third, the wealth of the country would be increased at once by the saving of the lives of many animals, and ultimately by the better understanding and prevention of various murrains and maladies. Fourth, improvement in the sanitary surroundings of both animals and men, and a much higher degree of health and soundness.

Effect of "Fertilizers" in Moist Seasons.

The present season has been an exceptionally favorable one for testing fertilizers. At least I have found that, so far as I can judge, they have produced up to the time of writing, very nearly a maximum effect. There is a danger, unless comparative trials are made with different fertilizers, of overestimating the excellence of those we do try.

I have one standard kind applied liberally to corn and to mangels, and its effects are so extraordinary that, had I not other rows of corn and roots which look now equally well, though manured with other articles—I should not say equally well, perhaps—and yet one patch looks as if it would produce just as much as the other. I observed one curious result. In planting corn, 20 rows were manured with superphosphate in the hill; 20 upon the hill after planting; 20 rows upon the hill and hoed in after the corn was up, and 20 more after the corn was three to four inches high. The only notable result was that the second 20 rows had to be replanted; not one quarter of the hills did more than sprout, and then the plantlets' kernels softened, a very few making a struggling life. After replanting, the corn did well, and now makes a good stand. I get about half the result from superphosphate harrowed in broadcast with corn, for fodder, as when applied to corn in drills—that is, when the fertilizer was scattered in the furrow, and corn sown in and covered. I am confident that although that in drills was put in a week later, there is now fully twice the burden of fodder upon the land that there is upon the broadcast piece.

Usefulness of "Sludge Acid."

The readers of the *American Agriculturist* probably know of the hue and cry that has been made in New York about the use by the fertilizer makers of what is called sludge acid—that is, the sulphuric acid which has been employed in extracting the impurities from petroleum, and which by the process becomes highly charged with oily matters, and emits a nauseous odor. The superphosphate of lime made with this retains to a considerable extent its peculiar, pungent, "aromatic," and very disagreeable odor. Now, insects are sensitive to odors, and I find that wire-worms avoid potatoes where this fertilizer is used, and that my corn has not been troubled with cut-worms and white grubs where this was on or near the surface. I attribute the freedom to the presence of the sludge acid used in the manufacture of the superphosphate, and am confident that it does no harm to the plants.

What Kind of Wheat.

Important to Grain Farmers.

For the benefit of our readers who are wheat-growers, we would like each one who has tried any one or more known varieties to write us *what* kind has done the best with him. If each will answer in order the following questions, the compared replies will doubtless be of value to each and all of them:

- (1.) What variety of Winter Wheat has succeeded best with you?
- (2.) What variety of Spring Wheat has succeeded best with you?
- (3.) What is your soil?
- (4.) What manure and other fertilizer do you use?
- (5.) What manure or fertilizer has given the most satisfactory results with you, and how much have you used per acre where such results were obtained?
- (6.) How much seed do you use per acre?
- (7.) What is the yield of crop you obtain?
- (8.) Does the Hessian Fly or Wheat Midge trouble your crop?
- (9.) When do you sow winter wheat?
- (10.) When do you sow spring wheat?
- (11.) What price do you obtain per bushel?

Be sure to give your post-office, County, and State. Answers are desired from farmers on rich virgin soils, where no manure is used, as well as from the old sections. Please answer each question separately, and in the order as above put down, and write the number against the answer given to it.

Grazing Pastures.—When a pasture is insufficiently grazed, considerable of its product is wasted. The tufts of uneaten herbage which often cover a large portion of the surface, are not only left useless, but injure the next year's grass. To keep a pasture in good condition, the droppings should be evenly scattered once a week, and the

fouled spots be sprinkled with plaster. In addition, it will pay to follow cattle with a few sheep, which will clear off the spots left by the cows. The finest pastures are those kept the most evenly grazed; and to secure this, grazing lands should receive constant attention from the first to the last of the season. But close cropping, by animals which are not all the time in the pasture, will, after a while, exhaust it; to provide against which, 150 to 300 lbs. per acre of fine bone or superphosphate, should be applied yearly in the fall or early spring. The phosphates are first exhausted from pastures; an average cow requiring about 100 lbs. of phosphoric acid in her milk yearly, and growing animals a large amount for their bones.

Talks on Farm Crops.—No. 19.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

We had a trial of a new binder. After the people had gone, the Deacon remarked: "Well, it did the work better than I expected. It did not tie the bundles quite tight enough to suit me, but I suppose that can be easily regulated."

"One thing is certain," said I, "binding by machinery is an accomplished fact. There are several machines that do the work well. Which will prove to be the best remains to be seen. This one ties the bunches with string instead of wire, for which many will prefer it. Before I buy a machine, however, I will wait to see if some one can not invent a binder that will bind corn-fodder as well as wheat, barley, oats, timothy, millet, etc. We have cut corn-fodder for several years with a reaper. It does the work better than it can be done by hand. It cuts the corn, and throws it off into bundles ready to be bound, and if the machine would also bind it, I would raise 20 acres. I would drill it in rows 2½ or three feet apart, cultivate it thoroughly, and cut it during hot weather—early in September; put the bundles into stooks, as we do wheat, and let them stay until well cured."

"Is not that," remarked the Deacon, "easier said than done?"

"No. I have managed corn-fodder precisely in that way, and do not wish for better feed for milch cows, sheep, or horses. But I have also had considerable trouble in curing and handling it. I have had part of a field where the crop proved every way excellent, and part where it was almost worthless; and that is not all, the poor fodder entailed twice the labor of the good. Why this difference? Simply because one was cut in the last of August, and the other two or three weeks later. The one was thoroughly cured during hot weather; the other grew larger, and was more difficult to cut, and the weather being cooler, with more or less rain, it was not fully and quickly cured, and lost much of its color and sweetness."

"I have not tried it, but I feel pretty confident that a crop of corn-fodder, if sown early, of an early, small variety of corn, and cut early, can be cured in August or early in September, so that it can be put in the barn or stack. The Germans call it 'Maize hay,' and I believe it can be so well cured that it will keep as well as clover or timothy. Why not? I have corn-fodder that is to-day (July 24th) as thick and heavy as it can stand on the land. It is in drills, 35 inches apart, and it is almost impossible to walk through the rows. Now, if such corn-fodder is cut the first week in August, and tied up into sheaves as we do wheat, and put in rather open stooks for a week or ten days during one of our 'heated terms,' there would be very little more sap in it than there is in clover hay. Stow it away in a stack holding, say ten tons, and do the work during a bright, hot day; and if you are afraid it will not keep, put a layer of dry straw between each layer of bundles of fodder, and finish off the top of the stack with straw."

"Or," said the Deacon, "put it in the barn at once, and have done with it."

"That," said I, "would sometimes save labor, but all of us have not barn room to spare at that season; and if the field is some distance from the

barn, it is quicker to stack in the field, and draw in the fodder when we are not so busy as now."

"Busy as now," exclaimed the Deacon. "I hope not! We have not had such a busy harvest for years. Everything ripened up at once. Wheat was ready to cut before we were half through haying. Then the bugs were on the potatoes, and the weeds in the corn, and an extra man could not be had for love or money."

"It is your own fault, Deacon," said I; "there are men enough if you would only take the right course to get them. I have heard you remark again and again, 'If a man comes here we have got to support him. He has got to have a living, and he will get it out of us.' And yet every year you go through precisely the same experience as you have this year. It is nothing new. It is so every harvest, only you forget from year to year. Next spring you will forget again. If a man wants work, you will say, 'I guess I can get along without you,' and you send the poor fellow into the city. He would be glad to work for 75 cents a day, and board himself. But you depend on hiring an occasional day hand. You leave undone much work that could be profitably done, and when the pinch comes you look around for your day men and they are not to be found. The Squire wants them, I want them, and others want them. One man told me that there were eight farmers after him one morning last week before breakfast. You offer \$1.50, \$2.00, or \$2.50 per day, and board, for men and boys not actually worth 75 cents a day. And you will do precisely the same thing next year."

"Well," said the Deacon, "I have made up my mind to hire an extra man next spring."

"I am glad to hear it; but that is not just what I want to see done. I want you and the Squire to encourage more good, steady, sober, industrious married men to settle in the neighborhood. The value of farm property, other things being equal, depends on the population. Our profits come from labor and not from land. We want more men."

"That is so just now," said the Deacon, "but it is not so in winter and spring."

"As a matter of fact," said I, "we had more men at work on this farm last December and January than we had during harvest, and still more in March, April, and May. There is no necessity for this fluctuation in the demand for labor on our farms. Unsteady employment and high wages are utterly demoralizing. But one thing is sure, we shall not lower wages by refusing steady work to steady men, and thus compelling them to turn tramps, and then paying high wages to some miserable scallawag for two or three weeks in the busy season. The system is all wrong. It makes young men idle, impertinent, unskilful, and vicious. There is work enough for all, and there are men enough to do the work. But the less we do, the less there is to do. If we plant less corn, there is less to cultivate and husk; and the same for other crops and in other industries."

I know that this is not talking about "Farm Crops." And yet the subject lies at the foundation of our agriculture—if not at the foundation of our national prosperity. I will not say that the cities need less labor, but I am sure the country needs more. How are we going to get it?

Do not be afraid to sell a good steady man an acre or two of land, and let him put up a small house. Or, if you prefer it, put up the house yourself and rent it to a good man, and give him work. And give his boys work. Geo. Geddes once told me, "The only way you will get a foreman is to raise him." And the best way to get good farmmen is to let them grow up on the farm. I have two boys that were born on this farm, and that have worked for me ever since they were able to work at all. They know my ways—know the land and the stock, and the implements and machines, and every year they become more useful and valuable. They are happy and contented, and will in time have farms of their own; and better still, know how to manage them and take care of good stock.

A young man is far better off on a farm than in a city. Farming is no longer the dull, plodding, uneventful, dreary existence that we read about. There is sufficient hurry, pressure, and excitement

to stir the blood and stimulate the efforts of an energetic boy or man. Our seasons are so short that a farmer must work lively. Whatever his hands find to do, he must do with his might. He must battle with the winds and storms, with rain and snow, with heat and cold. He must fight if he would win. He must be a plucky man. He must work with a will. If there is no snap in him he had better find some dull, steady, slow, unvarying employment in the city. He is not the man for modern agriculture. Our work is constantly changing. It is rare that we have three days of steady labor. We have in the spring to plow for barley, then harrow, then drill in the seed. Then sow clover seed. Then roll. If it rains, we go into the cellar and get potatoes ready for planting. When the stubble land is too wet to work, we plow on the sod. We have oats to sow, and corn, potatoes, and beans to plant. We are beginning to use more or less artificial manures. We are raising more mangel-wurzel and other root crops. We are constantly getting improved implements and machines, and needing more intelligence and skill in our operations. We have not time to get tired of putting in the crops, and of hoeing and cultivating before the grass is ready to cut; and a bright boy can relax his muscles by riding on a new mowing machine. Then comes the harvest. But what is haying and harvest compared to what it was when I was a boy? If we got through in six weeks we did well; now, with mowers and reapers, and rakes and unloading forks, we can do double the work in half the time. If a shower stops us we "green" the potatoes. Then there is the excitement of thrashing with a steamer. And all this time the weeds are calling to us, "be quick," "be quick,"—"we are after you," "we are after you." And if we are not lively they will catch us, and then we get a sound thrashing, which, if we are men, will make us work livelier another year. There is no time or chance for dullness on a properly managed farm.

"But what has all this to do with the labor question?" More than any of us realize. We want better men. And to get them, we must commence with the boys. We must get more married men into the neighborhood, and give their boys a good agricultural education on the farm. We must teach them. If you have a boy loading hay and two men are pitching, do not take delight in throwing the hay just where the boy does not want it. Put a good forkful on the corner, and another to bind it. The pitcher, if he is a man, can do half the work for the boy. Then in unloading, instead of the two big men standing on the top of the bay looking at the boy pitching the hay up to them, let one of them help him to unload occasionally. I have known two men and a boy drawing in hay; the boy was unloading. I had a spare man, and sent him to the stack to help. Where do you suppose he went? Did he help the boy? No. He got on to the stack and looked down at the boy, pulling and working at the load of hay below! And that is as much sense and manliness as you will find in half the old-fashioned common farm hands. Then when the load was off, if the men wanted a drink of water, the boy must go and get it for them. We must raise a better class of men. Look at the boys. They will soon be men. It will pay to educate them. Do not give them the poorest tools. If you have a new plow let the boy take it. Do not ask him to do the hardest work, or if you do, relieve him as soon as possible. These two boys I speak of will do anything I ask them. When thrashing with a machine, if there were two men and one of these boys on the straw stack, if anything should happen requiring two hands, and I called the boy and one of the men down, the chances are that the other man would think he could not take away the straw. He would give up the ship; but I could safely take the two men away and leave the boy. I could depend on him to strain every nerve and muscle to keep the thing going. He would know that I would relieve him the first moment there was a chance. I have had him in just such a situation more than once, and when I have gone to his assistance, he did not relax his efforts, but the expression of his face said plainly, "I knew you would come." He held the fort, and will do it again whenever I ask him.

Hints and Helps for Farmers.

TEMPORARY WHIFFLE-TREE.—One of the very annoying conditions in which a man occasionally finds himself is when he breaks a whiffle-tree away from home. A subscriber sends a plan of relief from the fix as follows: Procure a piece of the best timber to be found of the proper length; hew it down, and notch it so as to fit the clevises as shown at *a*, fig. 1. The clevises are attached as shown at *b*, and the happy man can go on his way rejoicing, if only he has an axe with him. This he will al-

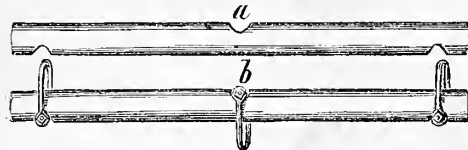


Fig. 1.—CHEAP WHIFFLE-TREE.

ways have if he follows the hints given in the *American Agriculturist*, that no one should go from home with a team or carriage without one, and also take a coil of copper wire, and a spare bolt or two.

A BARN CLOSET.—A very useful closet may be made in the corner of a barn or stable by nailing to the wall a common packing box, which can be procured at any country dry goods store for a few cents. The cover is fastened with hinges, and serves as a door for the closet. Two shelves may be fitted in the box. A place is thus provided for storing away the small odds and ends lying about a barn or stable, where they may be kept clean, and can be found in a moment when wanted. The closet, as it will appear when fastened up, and resting upon a cleat at the back, is shown at figure 5.

A WATER PAN FOR CHICKS.—To prevent young chicks from fouling the water in the saucers in which it is given to them, take a common fruit can, remove the top, and cut notches in it as shown in the engraving (fig. 4). The chicks can reach the water, but they can not foul it by running through.

A RAKE FOR A STABLE.—"A. W. L." sends a hint in the form of a sketch of a rake and scraper combined, which he uses to clean out his stables. The rake-head is a strong piece of hard wood, beveled on one edge, and furnished with teeth upon

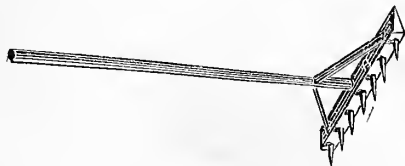


Fig. 2.—RAKE AND SCRAPER.

the other. It is fitted to a proper handle, and will serve to rake out half-used litter or manure, to scrape the floor, or to push the manure into heaps for convenient removal. It is illustrated in fig. 2.

HOME-MADE SAW-BUCK.—"A Reader" gives us a sketch of a very serviceable "buck" for sawing wood, made of four pieces of round wood. These are hewed into the form shown at fig. 3; a two-inch hole is bored through one of each pair of legs to receive the trimmed top of the other leg, and the legs are joined in the usual manner by a two-inch cross stick tightly wedged at each end. To prevent the legs from coming apart, the holes for the cross stick may be bored so as to

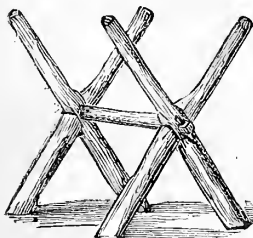


Fig. 3.—SAW-BUCK.

slightly notch the leg, which is then held firmly by the cross stick, and can not work loose readily.

MANURE DUMPING.—Yokes wear out and break sometimes, and the writer has recently seen a capital use for them when broken. The piece was attached by a chain and staple to the axle of an ox-cart, and was used as a rest or runner whereon to place the tail of the cart in dumping. Only a part, say a quarter of the load, is wanted in one heap, so

the cart is tipped up, a portion drawn out over the tail-board, then it slides along on its yoke-runner to where the next heap is wanted, and so on. The runner, when not in use, will take care of itself, or may be hung up under the cart-body. The illustration, fig. 6, represents one seen on the Welles brothers farm, Wethersfield, Conn.

Value of Sheep as Manure Makers.

Pasture alone is not sufficient to maintain sheep in profitable thrift, especially in the approaching breeding season; in addition, a daily ration of grain is needed. When the pasture is poor the quantity of grain should be liberal. With good pasture, a pint of mixed corn and oats, or rye and buckwheat, is little enough; with poor pasture half as much again would be required to keep full-grown sheep or growing lambs in proper condition. In some sections cotton-seed meal is coming into great favor for feeding sheep on poor pastures, a half pint being fed to each one daily. It is a nutritious food, and makes an exceptionally rich manure; and the quality of the dung of animals as a manure always depends on the quality of their food, for the dung is only the food, changed by the processes of digestion, less the portion taken into the system as nutriment. There is a mistaken idea, which has been fostered by writers who know little about

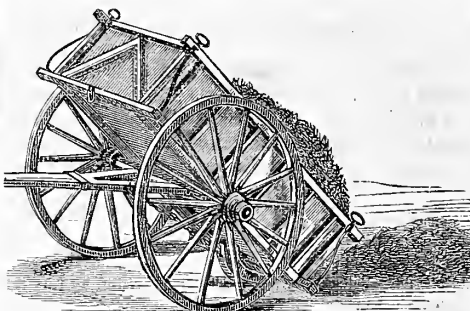


Fig. 6.—TO DUMP A MANURE CART.

sheep, that these animals have the unusual capability of living upon weeds, briars, brush, and coarse herbage, and not only of getting fat thereon but of greatly adding to the fertility of the poor soil. A sheep, however, has no power to make something out of nothing. By reason of its fine mastication, and its vigorous digestion, it can, perhaps, exhaust its food of more of its nutriment than any other animal except a fowl; and its manure, by reason of this finely comminuted condition, rapidly decomposes, and is at once effective as a fertilizer. To make our flocks thrifty—to secure strong lambs, heavy fleeces, and good mutton—we need to feed the sheep, and we must do this if we would turn the flock into vehicles for spreading manure and enriching the soil. It is a fact, that sheep supplied with a regularly given ration of one pint of grain per day, besides pasture, made in 60

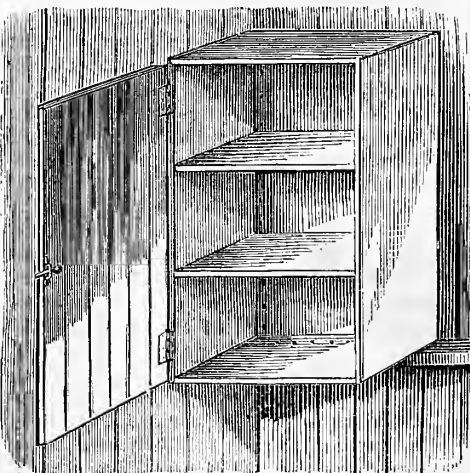


Fig. 5.—CLOSET MADE FROM A BOX.

days, 20 lbs. each more weight than a flock on as good pasture without grain; and the value of the extra flesh more than paid for the grain. In addition, the

fleece made more growth, a large proportion of the ewes conceived twins, and the lambs came stronger and were better supplied with milk. And, as a matter of course, the droppings of these sheep must have been richer in fertilizing value than those of poorly-fed sheep. The good shepherd careth for his sheep, and he has his reward in the richest return that can be made by any of our farm animals, for the food and care given. Instances of the successful use of sheep as fertilizers of the soil are given so frequently, but without any reference to the methods of their use, that it has become a general belief that nothing else is needed to make a poor farm rich. But if any novice is led to try it for himself, both he and his flock will come to grief.

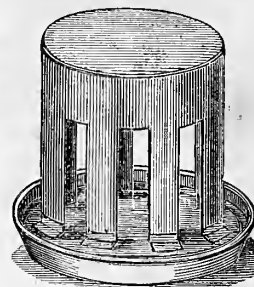


Fig. 4.—POULTRY WATER-ING DISH.

How to File and Set a Hand-Saw.

When a saw is in bad order, the teeth are irregular in length, and pitch, as in figure 1. This occurs through improper filing, and results in the saw working hard. The reason is that a saw irregularly filed, or set, cuts only with the longest teeth and those that have the most set. To remedy these defects, it should be pointed and filed until the teeth are all of even length, and are pitched so that the front of each tooth is at right angles with the back of the saw, as seen at fig. 2. The saw is fastened into a clamp (see fig. 6 on opposite page), which consists of a pair of jaws fixed upon a stand, and moved by screws as shown. An end view is given at fig. 3. The ends of the teeth are brought to a level by running a flat file lengthwise of the blade. The best form to give the edge is a slight curve from end to end of the saw, making the middle slightly rounding *outwards*, never hollow. The handle of the saw when in the clamp



Fig. 1.—A SAW IN BAD CONDITION.

should be to the left, and not be changed during the filing. The part held in the clamp should be filed completely before being moved, if the jaws are not long enough to hold the whole. On a rip-



Fig. 2.—SAW PROPERLY FILED AND SET.

saw, the teeth will be filed square, as shown at *a*, fig. 4; on a cross-cut, they are beveled upon alternate sides, as also shown in fig. 4. Both sides should be filed without moving the saw, which may be done by changing the position and manner of holding the file. A beginner should provide a handle at least a foot long for his file; this will enable him to hold it steadily, which is very necessary for good work. The proper size for a file is 3½ inches long for a saw having eight teeth to the inch. A saw is set before it is filed. The set given for easy cutting should be such as to make the cut as wide as twice the thickness of the blade. Several good sets are sold at the tool shops which are self-regulating, and make even work. The set of a cross-cut saw will make it appear as at fig. 5 when looking lengthwise at the teeth; and an even channel should be seen in which a knitting needle could be

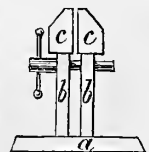


Fig. 3.

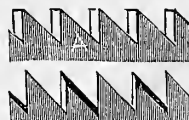


Fig. 4.



Fig. 5.

laid and moved from end to end. If only a few of the teeth are short, they need not be pointed, but may be

touched with a few strokes at each filing, until the rest are worn down to them. If one has no clamp, a strip of hard wood may be laid upon each side of

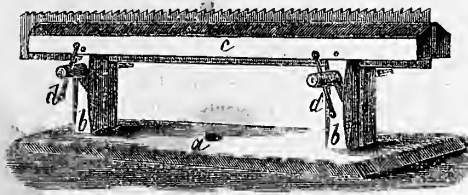


Fig. 6.—SAW CLAMP.

the saw, and the whole held tightly in a vice. In filing, the strokes should be made *from* the operator, and not towards him. The file should be grasped firmly in the right hand, while the tip is held lightly between the finger and thumb of the other. A safe rule is to work slowly, and to test the teeth as the work progresses with a try square. As long as the faces are kept at right angles with the blade of the saw, the backs must come out right. "W. D.," of Beaver Co., Pa., sends some of these suggestions.

Raw-hide Horse Shoes.

A method of shoeing horses with raw-hide, has long been in use on the plains, and found so serviceable and convenient that it might doubtless be found useful in many places where there are long periods of hot weather. There are also cases frequently occurring, in which disease of the feet might at least be alleviated by the temporary use of shoes cut from raw-hide or properly prepared sole leather. With these, that portion of the foot which needs the most precaution, viz., the crust or walls of the hoof where it meets the sole, will be preserved from contact with hard or rough surfaces;



LEATHER SHOE.

while the frog, generally too much protected, will reach the ground and become subjected to healthful action. For farm work, upon smooth soils free from stones or gravel, this kind of shoe will be useful during the summer season. A simple strip of raw-hide or sole leather, well filled with hot pine tar to make it hard and waterproof, will be sufficient for general use. A more durable shoe may be made of two or more thicknesses, fastened together by copper rivets as shown in the illustration.

Cattle Sheds.

Shelter should always be provided for cattle or other live-stock, both from the summer heat and

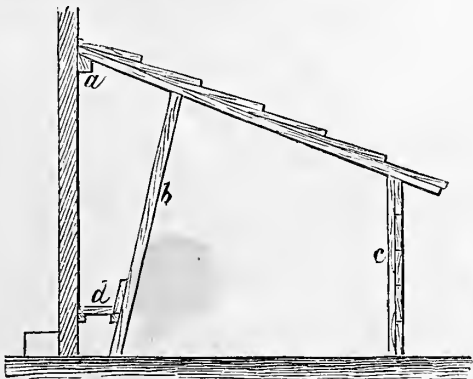


Fig. 1.—CHEAP CATTLE SHED.

the winter's cold. It is not necessary that the sheds should be costly, many a farmer who knows their need may wait too long for them unless they can be cheaply constructed and of cheap materials. It is now time to think about sheds for use in the coming winter, else when winter comes they will not be ready. The material may be such as will suit the purse of the owner, and the style the same of whatever they may be made. At figure 1 is a plan of a shed which can be built for about 50 cents a running foot, or \$50 per 100 feet, which will accommodate 25 to 30 head of cattle. The extra quality of the manure made in a shed of this

character in one season would repay its whole cost. This is built against the side or end of a barn, or a high board fence. A scantling, *a*, is spiked to the wall at a convenient height. Poles, *b*, are set in the ground 2½ feet from the wall, and sloping backward, as shown. Scantlings or battened poles are spiked to the pieces, *a*, the tops of the poles, *b*, and to posts, *c*, to support the roof. The front can be enclosed wholly or in part with boards nailed horizontally. The feed trough, *d*, is raised from the ground, and can be reached through openings in the barn wall. If abundant litter is thrown in this shed, the cattle may be kept in it for a whole winter, in perfect cleanliness; and the manure being trodden hard, will remain moist and inoffensive. In a similar shed, 40 feet long, 14 head of cattle have been wintered and kept dry and comfortable; the manure when removed in the spring was two

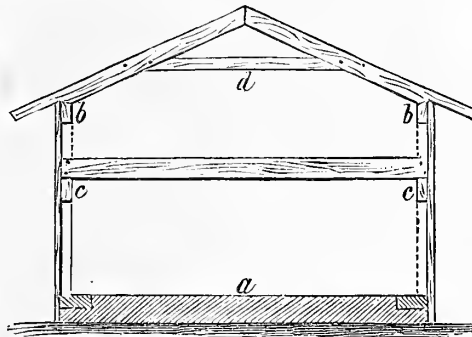


Fig. 2.—A CATTLE SHED OF BETTER BUILD.

feet deep, and in the best condition for immediate use. The animals were not fastened, but if it is thought desirable to tie them, each post will make a stanchion for hitching to. Of course it will be

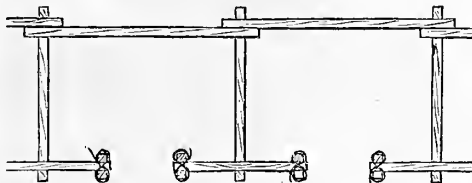


Fig. 3.—EASILY MADE PENS.

understood that such sheds are not recommended for occupancy by milch cows in very cold localities.

A better looking, but not more serviceable building may be made of timber and boards nailed and spiked together, without mortises or tenons, for about four times the cost of the shed above described. A section of the frame is shown at fig. 2. The sills, 6x6 (*a*), are halved together at the ends and pinned or spiked. The joints should be thoroughly painted with pine tar before putting them together. The boards are then nailed to the sills, fastening and bracing the corners until the plates, 2x6, (*b*, *b*), are nailed to the boards. A girt, 2x4, (*c*), is then fastened at such a height as to be made to support a floor if necessary, or about 7 feet. The beams of the floor should be of 2x6. The building may be 10 or 12 feet high if 20 feet wide. The rafters are then fitted to the plates and strengthened with collar pieces of board (*d*). Posts, 4x4, may be put in at the corners, and a few studs of 2x4 be added at every 4 or 6 feet around the walls. A building so constructed will be found quite stiff; and with a shingle roof, and painted with Johns' Asbestos paint, it may be neat and shapely. If room is needed for storing hay or grain, the upper floor may be removed and the building be filled to the peak.

Or pens of rails, poles, slabs from saw-mills, or other rough timber, may be made as shown at figs. 3 and 4. These are built up after the manner of log

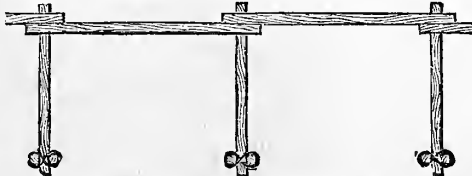


Fig. 4.—SIMILAR TO FIGURE 3.

houses, the ends of the poles at the entrances being secured by stakes driven down upon each side

into the ground, and fastened by wires or withes, twisted around them. The pens may be covered with cornstalks, coarse hay, or straw, and a

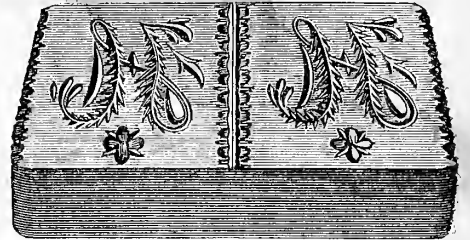


Fig. 1.—BUTTER STAMP.

quantity of the same used for protection on the exposed sides. As a protection in the field for sheep and pigs when about to produce their young, such pens will be found very useful; and in the West, where corn stalks and straw are a burden, such cheap sheds will be found an economical shelter.

Butter Stamps and Packages.

There is rivalry amongst fancy butter makers to excel, not only in quality, but also to offer their product in the most acceptable form, and in attractive as well as convenient packages. The favorite method of putting up

butter for immediate sale, is that of pound cakes, ornamented with a stamp and marked in the center, so that each can be divided into half pounds for use on the table. For this, moulds and stamps are used. A convenient and shapely butter stamp is shown at fig. 1, bearing the maker's initials. Being square, the prints may be packed upon the shelves in any butter-carrier without loss of space, which is an advantage. A package for round prints, known as the Lancaster Butter-Carrier, is shown at fig. 3. This holds 48 round prints, each contained in a separate cup of tin. In warm weather the central cups may be left out and the space filled with ice. This method preserves the butter in good shape, and enables it to be handled by the retailer in the best manner. A

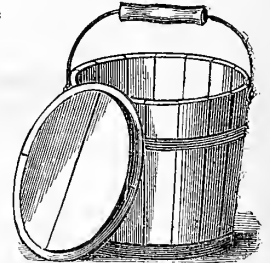


Fig. 2.—BUTTER PAIL.

useful package for distant shipment, is the white-oak pail, shown at fig. 2. It is made of several sizes, to hold 5, 10, 20, or more pounds. The smaller ones are convenient for the consumer and for the retailer; and the oak being free from objectionable scent or flavor, will preserve the fine qualities of the best butter from deterioration. They can be packed in barrels or boxes when put up for shipment.

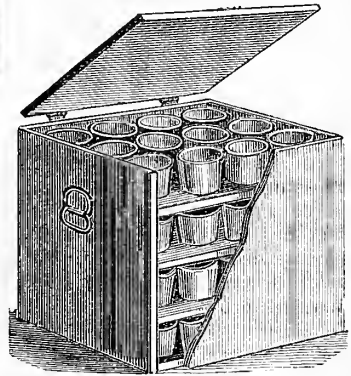


Fig. 3.—BUTTER PACKAGE.

the oak being free from objectionable scent or flavor, will preserve the fine qualities of the best butter from deterioration. They can be packed in barrels or boxes when put up for shipment.

Seed Wheats.—Now at planting time, it is important to choose a good variety of seed wheat. With every care in preparing the ground, all may be thrown away and lost by sowing a variety that is either not hardy or not prolific. Of two varieties sown side by side, and grown under the same treatment, on the writer's farm, one was hardly worth thrashing, while the other will yield at least 25 to 30 bushels per acre. The better of the two is the Clawson wheat. Of the fall wheats, we have also grown the Treadwell, Fultz, Lancaster Red, with the Clawson, which have proved hardy, almost

proof against fly and the midge, and they yield well, and make excellent flour. A newly imported variety, the "Challenger," grown this season upon Long Island, has done very well, and from its permanent reputation in England, is worthy a trial here.

Levelling the Bottom of a Drain.

When drains are laid so that the slope is uneven, they soon become useless. This is caused by the retention of water in the hollow portions, and by the deposition of sand or other sediment in these low spots until the tile or water channel is completely closed. In making a drain, the first thing is to cut the ditch. If this is perfectly done, laying the tile is a simple matter that can hardly go wrong. The chief consideration is to get an even slope without any depressions, which is a very difficult matter, and however well the surveyor's levelling and staking may have been, if the workman is incompetent, or not closely watched, there will almost certainly be hollows in the course of the drain. Where a stream of water is running in the ditch, it is not difficult to notice any deviation from a regular slope; but when the ditch is dry, it is far from easy, especially when the slope is only a few inches in a hundred feet. A guide made in the following manner, will serve to indicate any variance from a proper grade. It consists of a few "cross-legs" made of wooden bars, 2 inches wide, 1½ inch thick, and 5 feet long (fig. 1). They are fastened together with bolts, so that the legs can be spread or closed, and may be set astride the ditch. When the ditch has been roughly dug out, the level may be accurately fixed in two or more places, over each of which a pair of legs is set, and over these, a strong thin cord, such as a stout linen fishing line well oiled, is stretched and secured as shown. It is a matter of convenience how many of the legs are used; two will be sufficient in most cases, although a number of them may be used over an extended drain upon regularly sloping land, as a guide for the first excavation. When the line is set up, it may be prevented from sagging, by the use of a few intermediate supports as shown at *a*. These are square rods 1½ inch thick, furnished with sharp iron points, and each having an arm, a foot long, as indicated. The bottom of the ditch may be graded from this line by testing it occasionally with a plumb-bob. By testing every foot, a perfect grade may be secured, and in laying the tile, the test line may be again used for certainty. It is necessary in placing the "cross-legs," to have them set so that the line supported by them is parallel with the proposed grade of the drain. This may be done by spreading the legs apart or by drawing them together.

A correspondent sends a sketch and description of a method of making levels upon the surface, which may also be adapted to the levelling the bottom of a drain. The implement consists of a "pair of legs" with a cross-bar, upon which is mounted a common builder's spirit-level. The legs are made of strips 1 inch thick, 3 inches wide, and 11 feet

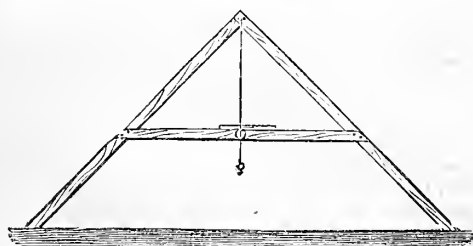


Fig. 2.—A LEVEL AND PLUMB.

long. The cross-bar is 9 feet long. The spread of the feet is exactly 16½ feet, or 1 rod. The level may be temporarily used to secure the correct hanging of the plumb-line, and the marking of the notch, shown at figs. 2 and 3, and may then be laid

aside. When the instrument is correctly marked, a block of wood one inch thick may be placed underneath one foot, and a mark made where the plumb-line strikes the cross-bar, as shown at fig. 3. A scale may thus be noted upon the cross-bar, each mark showing a deviation of one inch in a rod, or 1 in 198, and the scale may run each way from the middle. It would be better to read thus, 4, 3, 2, 1, 0, 1, 2, 3, 4, and so on; the center 0 showing a level, and the others, 1, 2, 3, or 4 inches slope in 198 feet. In practice, the instrument is placed in the drain to be tested, and the mark beneath the plumb-line

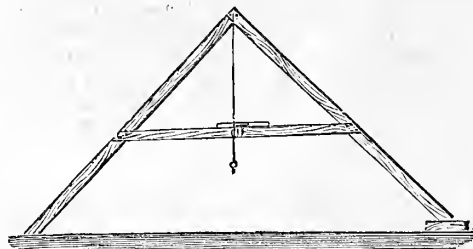


Fig. 3.—LEVEL IN USE.

noted. Whatever this may be, the same inclination should be kept along the course of the drain, and a test made at every 6 or 8 feet if desired. The instrument may be used for laying out drains in the first instance, by placing it upon the ground with the right leg at the starting point, and moving the left one here or there until a proper slope is found, when a peg may be driven in the ground down to the surface, and the right leg moved on to it, when the left one may be used again to find the proper spot. By traversing the required direction until the termination of the drain is reached, and count-



Fig. 1.—A GUIDE FOR GRADING THE BOTTOM OF DRAIN.

ing the pegs, the whole inclination will be ascertained, when the drain may be run in a direct line, from the first to the last peg, avoiding the meanderings. Another level which will serve to test the inclination, is shown at fig. 4. This is marked similarly to that shown at fig. 2, but is differently

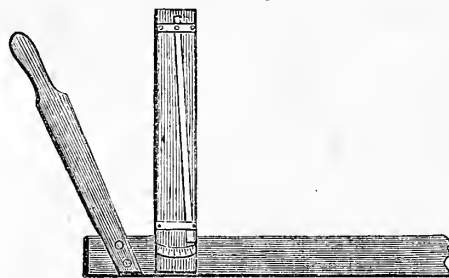


Fig. 4.—A HANDY INCLINATION LEVEL.

constructed. The L is made at right angles, and the amount of divergence is shown by the swinging of the plumb-rod. The bottom may be exactly 100 inches (8 ft. 4 in.), and every inch of slope can be marked upon the scale. The handle serves to slide the level along the bottom of drain.

Sheltering Vehicles and Machines.

Notwithstanding the number of carts, and mowing-machines, and horse-rakes, and other tools that we see standing by the roadside or in the field, the year round, most farmers believe in the economy of housing all these things. They know that iron rusts, and that wood-work swells and shrinks with the changes of the atmosphere. They think it is only a question of time that the new carriage house or shed shall be built, where the scattered tools and vehicles will have a permanent home. This waiting to provide the needed shelter is

the most expensive kind of saving. The elements are all the while at work, depreciating the value of the wood and iron that are exposed to the weather. A scythe and snathe hung in a tree through one season, is old, warped, and rusty. Stored in the tool-room it is little changed in look or value; no repairs are wanted, and it is ready for use as soon as the grass is ready. The new cart that is left by the roadside soon goes to pieces; even if painted, the paint soon wears off; the sun cracks paint and wood, the heat expands the cracks, the rain enters the openings, and decay commences, the joints become loose, the felloes and spokes shrink in the dry weather, and the tire must be set often to keep the vehicle in running order. Farmers often overestimate the expense of a tool or wagon house. If they have timber or building stone upon their farms, very little money need be laid out to put all running gear under cover. A roof and siding to keep out rain is the main thing. Flooring is not needed. The bare earth under all wooden wheels with tires, if dry, will answer instead of plank. Just enough moisture is absorbed from the earth to keep the wheel in good condition. The tire will not need setting so often. A shed set upon a bank wall makes a good shelter, and is within reach of most farmers.

The Best Fertilizer.

How to make a formula for a fertilizer for any particular crop or soil, which shall produce satisfactory results, and at the same time be most economical of material—wasting nothing, and using only so much as the special case requires—is a most difficult question for any one to answer, unless he be the best of agricultural chemists, and is thoroughly familiar from long experience with the land under treatment. Yet, just such information as this is what farmers in various sections are continuously writing to us for. The first part of the problem is comparatively easy—i. e., to make a fertilizer which shall produce great results—but what to leave out is a difficult point to settle. Indeed we may say, that this is a point which never can be settled exactly, so great a difference is there between adjacent farms and fields, and parts of the same field even, or further still in the composition of the same spot of ground at different periods. But wonderful progress has been made in the solution of this problem—which involves so much of success or failure in agriculture—within the past few years, and for the most part has been recorded in the *American Agriculturist*. Here is a letter from "J. W. L.," of Lancaster County, Pa:

"Will you please give me what you consider the best formula for making a phosphate for wheat, also tobacco and corn, to be used on limestone soil. Farmers in this County have generally been making their own, and are using more every year with good effect. It is made according to the following formula, viz., for one ton take

600 lbs. Bone.	50 lbs. Salt.
200 " Oil of Vitriol.	300 " Plaster.
150 " Sulphate of Soda.	7 bush. Sand or Ashes."
10 " Nitrate of Soda.	

In this case the same fertilizer is used for three crops of quite different requirements, yet apparently with like "good effects" on each. Tobacco is a great potash feeder, containing about 27 lbs. in 100 of ash; while corn contains 30 lbs., and wheat 34 lbs.; yet this fertilizer contains only what potash is in the 7 bushels of ashes—not over 20 lbs. But the Lancaster County average tobacco crop of 1,500 lbs. per acre requires 80 lbs.; and as only 400 lbs. of the fertilizer are applied per acre, it only gets 4 lbs., and not always that, since the ashes are considered of so little importance as to sometimes be replaced by sand. Yes, the sand is even named first. The same is true of wheat and corn as respects potash, though to a less extent. If this fertilizer produces satisfactory harvests year after year for each of these crops, it is quite evident that the soil where it gives such results, does not need potash, for the present at least. Yet almost any farm in New England, or elsewhere, on which the same sandy-loam soil prevails, would show a very different result, as potash thereon is one of the essentials. And we are inclined to doubt whether the same showing

would be made for many years in Lancaster County. As to the composition of the fertilizer, we see nothing essential except the bone and the oil of vitriol (sulphuric acid). Since the mineral portion of bone is composed almost entirely of lime compounds, when it and the acid are put together, chemical action takes place, which forms a large amount of sulphate of lime (plaster). Why, then, add more plaster? The plaster thus formed in the fertilizer would have a similar effect to the sulphate of soda, and could well take its place; and there is so little of the nitrate of soda as to be of no moment whatever, though 100 lbs. would doubtless have a materially beneficial effect. Even the acid (oil of vitriol) could well be dispensed with, provided the bone be reduced by composting with stable-manure for three to six months. Such a compost, kept heating by occasional wetting (best with liquid manure), and protected from loss of the ammonia by a light covering of earth, will fit the bone for use as well as by using the costly acid.

Thus it will be seen that there is great waste in such home-made fertilizers, even though they produce good results. We have pointed out one or two points of error; but we have not considered the nitrogen or phosphoric acid, either as a whole or in relation to the various crops; nor touched upon the amount of the fertilizer required in each case; the first will have further consideration; the second must be determined by individual experience from year to year on the farm.

Profitable Use For Some Waste Lands.

How will this do? All over the mountainous regions of New England, Eastern and Southern New York, Central and Western Pennsylvania and Virginia, Eastern Kentucky and Tennessee, and so on Southward, as well as in some of the far Western States and Territories, there are very many tracts of high land too stony for cultivation, or even for good pasturage. When the first wood is cut off, a second growth comes up, straggling, bushy, often scrubby. In 15 to 20 years a moderate crop of fire-wood is again cut, but there is little valuable timber.—While wandering over the large farm of a friend on the west side of the Hudson River, the other day, we came upon a sort of table-land field on a hill that had been cleared, and an attempt made to plow and cultivate it; but it was too stony, and the proprietor said he should give it up as not



Fig. 1.—SECTION OF HAY CARRIAGE TRACK.

worthy of attention. All around it were groves of cedar, chestnut, and other kinds. The chestnut trees appeared thrifty. We set to reasoning thus:

A man with pick and spade could dig up and prepare at least 20 places a day that would each furnish a good bed for a young chestnut tree. Putting these in regular squares, say about 12 feet apart, would give 300 trees to the acre. At \$1 a day, this would cost \$15 per acre; on many fields it would be done for much less. An abundance of young chestnut trees that will bear transplanting can be readily produced at trifling cost by planting the seed in a good plot of ground. Allow \$5 for the 300 young trees, and we have them well started and growing on an acre, at a cost of \$20.—One or two days annually, with a long-handled hatchet, or wide chisel, or bush-hook, would suffice to clip out starting under-brush, and trim off side branches from the trees to keep them growing upward, so as to furnish tall trunks for timber. No other expense would be required. The trees set in the small prepared plots will send out their roots among the stones, and grow vigorously, if the ground be not wet or springy. The annual fall of leaves will mulch and enrich the soil. In about 14 years there would be 300 fine trees, each worth at

least 50 cts., or \$150 per acre, for posts and rails, besides not a little fire-wood. The original outlay of \$20 would be doubled by loss of interest. Allow \$10 more for pruning, care, etc., and would there not be a profit of \$100 per acre? Nothing is allowed for the value of the fruit or nuts that would be gathered. We said above that our thoughts run out in this channel, but we are not sure of the

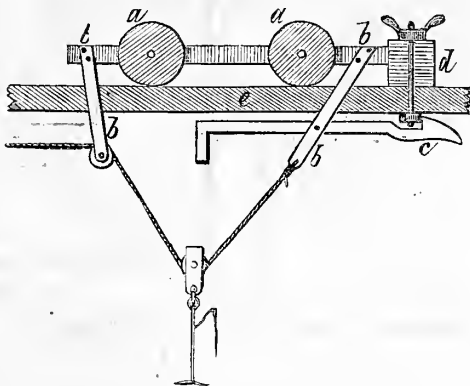


Fig. 2.—HAY CARRIAGE.

feasibility of the plan, and we invite criticisms, pro and con, and any suggestions. Would, or would not the above be better than to invest the \$20 in bonds or mortgages? The land is practically worthless now; if it yields any pasturage, it would yield quite as much with the under-brush kept down, after the trees are too large to be injured by the animals roaming among them.

A Home-made Hay Carriage

A correspondent from Somerset Co. Pa., sends the following description of a hay carriage, which can easily be attached to a barn at any time, but more easily when the barn is building. The rail track is shown at fig. 1. It consists of four pieces of 4x4 timber; two uprights, *a*, and two horizontals, *b, b*. These are as long as may be made necessary by the pitch of the roof, and are framed or bolted to each pair of rafters. The space between the uprights, *a*, is 8 inches; that between the ends of the horizontals, *b, b*, is one inch. The rails which rest on the ends of the horizontal supports, *b, b*, run the entire length of the barn, and are 5x3½ inches, thus leaving a space of one inch between them. The rails are firmly secured by bolts, the heads being sunk even with the surface, so as to offer no obstruction to the wheels.

The carriage (fig. 2) is made of strap-iron bent as shown at figure 3. The wheels *a, a*, are of wood or iron, and flat on the tread; are 5 inches wide, and from 6 to 9 inches in diameter. The iron straps are 2 feet long, 2½ inches wide, and ½ inch thick. The hanging pieces, (*b, b*, figs. 2, 3, and 4,) by which the hoisting rope is supported, are 13 inches long. They are bolted to the carriage as indicated; one is provided with a pulley at

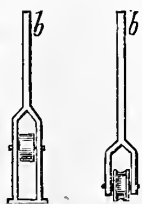


Fig. 4.

the end over which the rope passes, and one carries the catch *c*. The construction of these is shown in detail at fig. 4. At fig. 5 is a movable fastening, upon which the catch hooks itself as the carriage is drawn back to its place, either by a light rope, or a rope and weight. The top piece, *d*, (figs. 2 and 5), and the under piece, embrace the rails *e, e*, between them, and hold them firmly when the thumb-screws are tightened. This part of the catch is moved upon the rail as is found necessary for the hoisting of the hay. The carriage can be used to hoist hay, straw, or grain, either into, or out of the barn, or from one end of the barn to the other, or from either mow to the floor in the middle.

Cats, versus Rats and Mice.

We have never seen any estimate of the damage inflicted upon the farmer by rats and mice, that did justice to the subject. The damage is wide-spread, and outside of the realm of statistics, it would be hardly possible for any farmer to estimate, except approximately, his own personal loss every year from these vermin. He is made aware of the ruin wrought, on almost every part of his premises, and every day in the year. They are in the cellar reducing his winter stores of vegetables, or if walled out therefrom, by stone and cement, they find refuge in the barn, invading grain-bins and hay-mows. They make their homes in the field, under stacks, and shocks of grain. If there is anything tender and edible, they lie in wait for it. How they prize young ducks and chickens, every poultry-woman knows. What a charm there is in seed-corn, and indeed, in seeds of all kinds, for them, every one who saves seeds knows. Cement is good, if faithfully applied, but not one farmer in a hundred uses it; and those who do, find it impossible to keep cement between rats and their grain crops at all seasons of the year. They prey upon corn on the stalk and in the shock, and upon wheat in the stack. They frequent mangers, and pigs' troughs, and the hen-house. Traps are very good, and rats may be thinned out by these ingenious contrivances. But

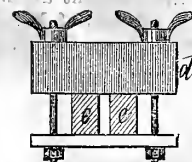


Fig. 5.

your neighbor does not use traps, and he is always raising rats and mice to stock your premises. The creatures will emigrate without any respect to the graves of the victims you are all the while burying out of sight. A clean house and barn to-day, may be haunted with lively vermin to-morrow. Poison is effectual and carries the war right into the enemies' country. But then it takes a good deal of time to prepare it, and to seclude it from everything but rats and mice. It is not to be forgotten too, that they have a malicious way of crawling into their burroughs, wall in and ceiling, and reminding you of their presence in an ungenerous way. If the evil that men or rats do, would only die with them, we should have some consolation. But it will not. There are so many failures and infelicities about the proposed remedies, that we have come to think better of the old and time honored method of destroying rats and mice. The cat has her drawbacks, it must be admitted. She is noisy, and will sometimes fight the dog, or prevent birds from nesting about the house. But then, she does war upon rats and mice, and makes a business of destroying them. It is literally vituals and drink to catch these vermin, and she educates her offspring in the same habits. Other parents sometimes fail of transmitting goodness. But by birth and education, the cat is a rat-catcher. Every one of her brood walks in the way she should go. She is cheap. Her time is not worth much. She slays, and saves money while you sleep. Let us cultivate cats.

CONNECTICUT.

The Didders as Weeds.—(*Oscuta*).

Those little parasitic plants, the Didders, are well known to those who notice the common things about them. In almost every swampy place their yellowish threads may be seen in late summer, hanging in tangled masses over other plants, upon the juices of which they live. In Europe, one Dodder injures the clover, and another the flax crop. In December, 1874, we figured a Chilean species that threatened serious damage to the Alfalfa fields of California; and in November, 1868, another, that had made its appearance in a nursery, and attacked the young apple trees. Recently, we had another instance of the appearance of a Dodder as a weed. A gentleman in New Jersey, who is experimenting with the choicer basket willows, brought rods from his plantation, 5 or 6 ft. high, which were festooned to the top with the thread-like stems of the parasite. As flowers had not yet appeared, we

could not determine whether it was one of the half dozen or more native species of *Cuscuta*, or a European one, imported with the willows. At all events it is in such abundance as to threaten to seriously injure the value of the willows, and if not exterminated, their culture in that locality will be impossible. The course to be pursued will depend upon the future development of the weed. If that flowers and perfects its seeds so late that the willows may be cut without injury to the stools, then it may be well to wait a while, but if there is danger of stocking the soil with seed before it will answer to cut, then hand-picking of the clusters must be resorted to. As Daddlers always start from a seed that germinates in the ground, and draw their nourishment from the soil until the stems have thoroughly attached themselves to the bark, it will not be difficult, now that the nature of the pest is known, to keep it down in the future.

A Large and Complete Barn.

The plans and perspective view presented herewith, represent the fine stable on Houghton Farm, the property of Mr. Lawson Valentine, Mountainville, Orange Co., N. Y. It is located in a central

The farm buildings are numbered, this being No. 1, shown by a conspicuous figure in white over the main door. The interior exposed wood-work is varnished, making a neat and substantial finish. Systematic work is enforced in the care of the animals, and is encouraged by appropriate mottoes about the stable in the basement, such as the following: Over the horses, "I'll do my best for a kind and generous master" and "Take good care of me and I will serve you long and well;" on the feed passages, "Waste not, want not," and "Be regular in feeding and watering;" over the carriage-way, "Be prompt;" and conspicuously before the eyes of the men when harnessing, the well-known saw of Davy Crockett, "Be sure you are right, and then go ahead;" over the farm harnesses, "A stitch in time saves nine;" over the tools, "A place for everything, and everything in

gates for separating the cattle department from the horses. Another barn serves for stabling a portion of the cattle. Figure 3, shows a plan of the main floor; *a*, is the tool room, on the wall of which are

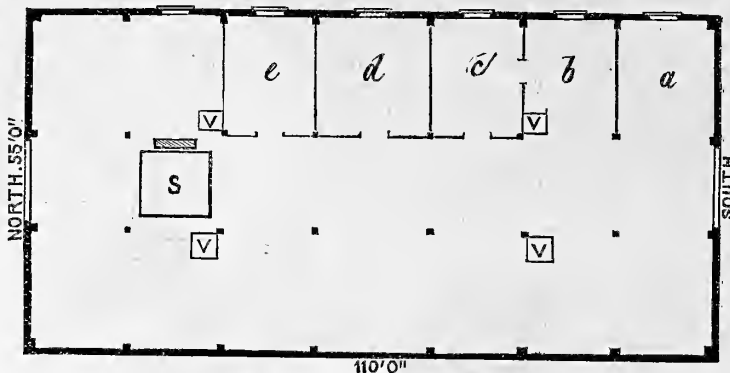


Fig. 3.—PLAN OF MAIN FLOOR.

the words, "Return every tool to this room;" *b*, contains a horse-power for driving a feed-cutter, thrasher, etc.; *c*, is used as a stowage-room for cut feed, etc.; *d*, is the grain room, provided with bins and convenient shoots; *e*, is a room for the trainer, who there sleeps just over the animals he loves and cares for so well; the room also contains closets for the nicer harnesses. An opening in the ventilator, and a wakeful ear, enables the trainer to hear every sound from below. The letters *v, v, v, v*, indicate the ventilators; *s*, shows the large platform scale, on which every load of hay or grain is weighed as it enters the barn. The floor of the basement is made of brick, laid on edge in mortar, underlaid by concrete. Figure 4 represents one of the horse-stalls. The upper portion consists of iron rods extending from the top of the sides to a railing two feet above, and from the manger to the railing, as illustrated. The stall is 9x4½ ft.; and the manger is 1 ft. 9 in. from front to back. An iron feed trough for grain occupies one end of the manger, indicated by the dotted line at *G*; the remainder is taken up by the hay-box, *H*, the bottom of which is shown by the dotted line; a door in front allows for cleaning out the feed box, and a closet for storage. The box-stalls are also provided with the iron rods for a top-finish, so that a person can easily see into them without entering. This barn has so many conveniences that we have not space in one article to describe them. In its general completeness,—fine proportions, conveniences, and compact arrangement, it has few equals.

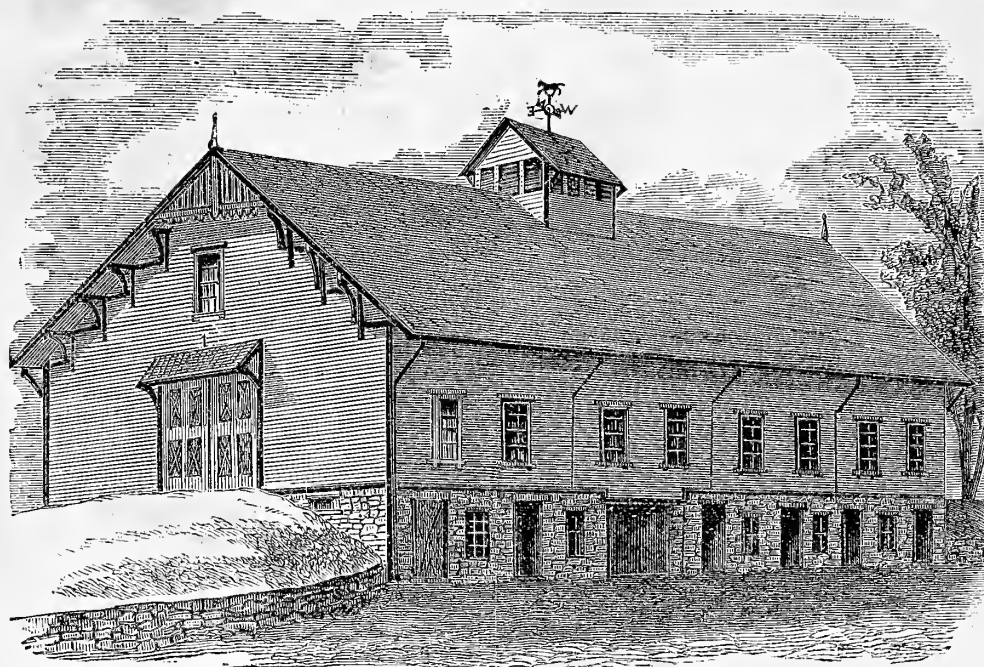


Fig. 1.—BARN AT HOUGHTON FARM, MOUNTAINVILLE, N. Y.

position on the farm, about 25 rods from the house, on a side hill, and supplied with water brought from springs. The barn is handsomely proportioned, and with its slated roof and red-painted walls, with black trimmings, presents a fine appearance. For the keeping of the owner's large stud of carriage, saddle, farm, and breeding-horses, it is ad-

its place." There is also the precaution, "Look well to ventilation;" and oft repeated, "No smoking." A clock on the wall marks the moments of wasted or utilized time. Iron-framed lanterns, with reflectors, are made fast to the wall at one end of each passage. Opening into the basement, and extending nearly to the roof are four ventilating flues, each 4 ft. square. Their outer edge is on a line with the drive-way, and the inner side has openings fitted with movable slides, at various heights, which make the flues serve as convenient hay shoots into the floor below. The building is 110 feet long, by 55 feet wide, with 20 feet posts, and is 40 feet from the main floor to the ridge. It rests on a stone basement ten feet high in the clear; this basement

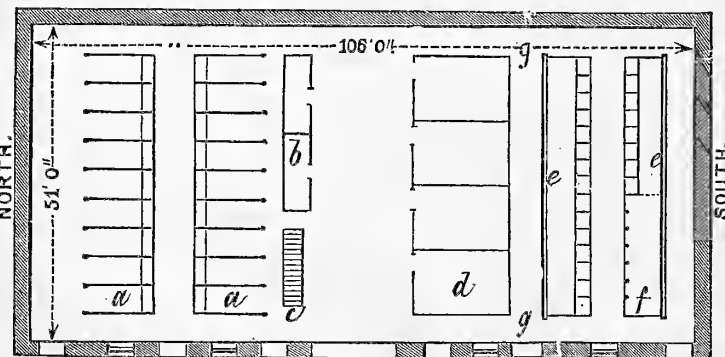


Fig. 2.—PLAN OF BASEMENT.

mirably adapted, and worthy of imitation by any well-to-do farmer desiring a handsome and useful barn; and in its general plan may be followed on a smaller scale by any one having numerous horses and fine cattle to provide stabling and shelter for.

provides comfortable and convenient stabling for the owner's fine stud. The division is shown at figure 2; *a, a*, are the horse stalls; *b*, the harness room, 4 x 25 ft.; *c*, stairs; *d*, box-stalls, 10½ x 14½ ft.; *e, e*, cow-stanchions; *f*, ox-stanchions; *g, g*,

Fruit Growing in California.—Until recently, the California fruit growers enjoyed an enviable immunity from the various insects, blights, and other obstacles with which Eastern growers have to contend. The Californians have shown great enterprise in introducing fruits from all parts of the world, and with them have come the enemy,

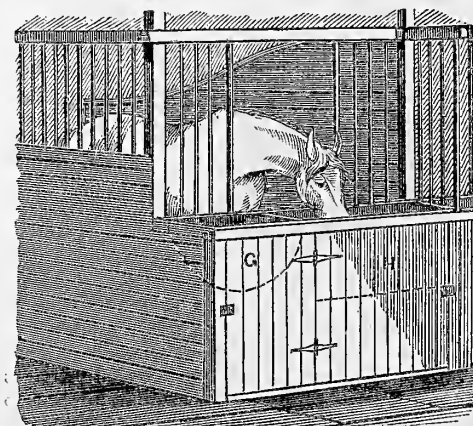


Fig. 4.—VIEW OF HORSE STALL.

and for the last year or two, the California Horticultural and Agricultural Journals are almost as much devoted to the extermination of insects and fungi, as are similar papers in the older States.

The Starry Magnolia.—(*Magnolia stellata*.)

Many months ago, Messrs. Robert B. Parsons & Co., sent us the flowers, and later the foliage, of two new Japanese Magnolias, to which had been given the names respectively of Hall's and Thurber's Magnolia, (*M. Halleana*, and *M. Thurberi*), the one in honor of Doct. Hall, a long resident of Japan, and who has been instrumental in introducing a number of Japanese plants, and the other in honor of one of the Editors of the *American Agriculturist*. These Magnolias were first introduced

sion as to quite cover the bush, but are individually smaller than those of the related species, averaging from 3 to 4 inches in diameter. They have an exceedingly pleasing fragrance. The other, offered as *M. Thurberi*, mainly differs from this in the number and size of its petals. For small places, plants of moderate height and abundant bloom, are most desirable, and such really valuable additions as these Magnolias to our collections of early flowering shrubs, are most welcome, and we thank Mr. Robert Parsons for making us acquainted with them.

We have heretofore expressed our regret that botanical names should be given to nursery plants,

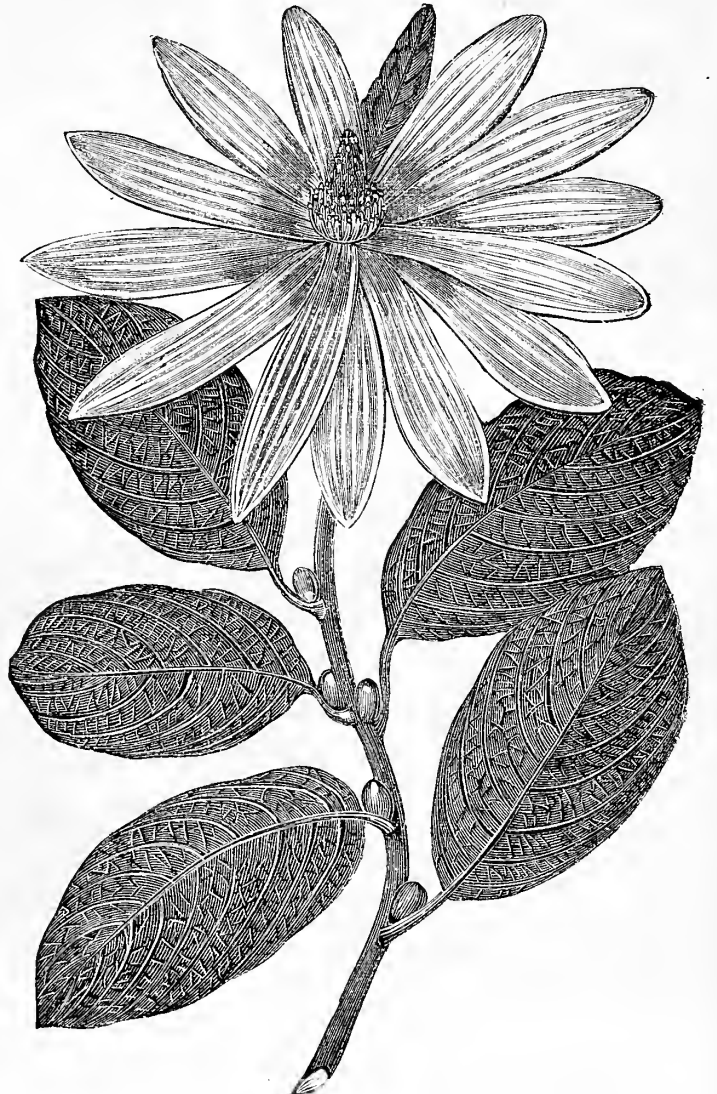
A California Succulent.

(*Cotyledon edule*.)

Within a few years, the plants known collectively as "succulents" have been much in fashion. Their compact and low growth, their fleshy leaves, usually arranged in rosettes, and the considerable variety in their color, which is generally of soft and pleasant tints of green, especially adapt them for working out figures in mosaic planting, and allow the production of effects in gardening that are possible with no other class of plants. Under the



EDIBLE HOUSE-LEEK.—(*Cotyledon edule*.)



THE STARRY MAGNOLIA.—(*Magnolia stellata*.)

into cultivation by Messrs. Parsons & Co., Flushing, L. I., in whose nursery they flowered several years ago, and where they received the names above mentioned. When the old firm was made into two, the stock was (presumably) divided between the new firms of Saml. B. Parsons & Sons and R. B. Parsons & Co., as we notice that both firms offer them in their catalogues. Aside from their intrinsic merits, these trees have an especial interest as being American introductions. We give an engraving from a drawing, made last spring from the original stock of the one called Hall's Magnolia. The flowers were received at one time, and the leaves at another, and by some misunderstanding, the artist has put the flower upon a leafy branch. This conveys a wrong impression. Like *M. conspicua*, *M. Soulangeana*, and other Chinese Magnolias, this produces its flowers in advance of the leaves, and to show it correctly, the flowers and leaves should be presented on different branches. The plant has a dwarf habit, and will probably not reach a height of over 6 or 8 feet. It produces a great abundance of bloom, which appears earlier than that of the two well known kinds just named. The pure white flowers are produced in such profu-

and the case of this Magnolia calls for a renewal of this protest, as it affords an example of the confusion it leads to. No conscientious botanist gives a new name to a plant unless he is well convinced that the plant itself is new. Still, with all possible care, our books are loaded with synonyms. We would not imply that the nurserymen would willingly give a name to a plant already described, but, with a few rare exceptions, nurserymen have not the books, herbaria, and other facilities for determining whether the plant new to him is really new to science. This Magnolia seemed to be new, and it was named *M. Halleana*, was sent abroad under that name, and only in June last was figured as such in "The Garden," (London.) It now appears that it is really an old plant, it having been figured 25 or more years ago by Siebold & Zuccarini as *Buergeria stellata*, as they considered it distinct from *Magnolia*. Sir Joseph Hooker, in a recent number of the "Botanical Magazine," puts the matter right by figuring it under the proper name, *Magnolia stellata*, and before this article was put in type, there came to hand the "Revue Horticole," in which the plant is figured by Carrière under the same name. *M. Halleana* must therefore be dropped.

general term "succulents," are included plants with no immediate botanical relationships, the large family *Compositæ* furnishing several, though the great majority belong to the Stone-crop Family (*Crassulaceæ*), of which the old and well-known "House-leek" (*Sempervivum tectorum*) and the common "Live-forever" (*Sedum Telephium*), now in some places only too common as a weed, are the most familiar representatives. The majority of the "succulents" being tender, mosaic bedding can only be undertaken by those who have sufficient greenhouse room for the storing of the plants during winter, and examples of this style of gardening are limited to the grounds of those with proper means and facilities. The plants most largely used are the different species and varieties of what are given in the catalogues as *Echeveria*, and comprises plants from almost every part of the world, including several, and those among the most striking, from our Pacific Coast. But botanists (Hooker & Bentham abroad, and Gray, Watson, and others at home,) have lately found that there is no good reason for the existence of the genus *Echeveria*, as distinct from the older *Cotyledon* of Linnæus. So the plants named in

honor of one *Echeveri*, who drew Mexican flowers so handsomely, must go back to *Cotyledon*, so named from the Greek word for a cavity or cup, the foliage forming a sort of leafy cup. Long before mosaic planting in our gardens with *Cotyledons* (or *Echeverias*), and similar things, was thought of, the writer had a view of a most complete and extensive example of mosaic work, which was perfect in its way, it being nature's own planning. In 1852, we made an excursion to the Coronados Islands, a rocky group rising abruptly out of the Pacific, some 30 miles directly west of the beautiful harbor of San Diego. It was a difficult matter to make a landing, and an equally difficult one to scramble to the top of the rocky cliffs. At the top were a few acres of rock, seamed and creviced in every direction, and wherever there was a seam that would give the plants a foothold, there grew, as thickly as they could stand, what we may call the "Powdered House-leek," *Cotyledon pulverulentum*, now one of the most esteemed and most effective of the succulents employed in mosaic bedding. The species is called *pulverulentum*, because the leaves, which form a beautiful rosette, appear as if sprinkled with some white powder; there were besides this, less numbers of one or two other species. The formal shape of these plants, each being an almost exact duplicate of its neighbor, their regular disposal in the long lines of crevices, and the fact that they made up nearly the sole vegetation of the surface of these islands, formed a scene most weird and striking. The surroundings contributed to the strangeness of the picture. It was framed in by an immensity of ocean, the dash of which against the rocks made a solemn diapason, relieved only by the shrill cries of the sea-lions disturbed by our arrival, and the screams of multitudes of sea-fowls unaccustomed to the presence of man. As we looked upon this example of nature's mosaic planting, we little thought that we should thereafter see the same plants contributing to the attractions of the gardens of Mr. Hume at Wellesley, or of Professor Sargent of Brookline, both in far off Massachusetts. With this personal digression we come back to our succulents, the *Cotyledons*. Among the species on the Pacific Coast, one appears to have escaped the attention of cultivators, *Cotyledon edule*, which may be called the "Edible House-leek." Since seeing it wild on the Pacific Coast, we first met with it in cultivation in a small but choice collection exhibited at the Centennial by Miller & Sievers, of San Francisco, Cal. Since then we have received it from a California correspondent, and this summer have had it in flower. The plant forms a tuft, a foot or so across, made up of numerous short leafy branches, one of which is shown in the engraving. The leaves, it will be seen, are cylindrical, and are from three to five inches long; they have a peculiar glaucous hue—a very pale green—and would be quite as useful in producing planting effects as the *Kleinia*, now so much employed. The flower stems are a foot or more high, and produce a panicle of whitish flowers, like those shown in the engraving reduced in size. This is very unlike in its general aspect to any other species of the genus, and its horticultural value as a bedding plant has not yet been fully tested. At all events, we find it an interesting plant for a cool green-house, and value it none the less because it is a native. It was described by Nuttall, who first made it known, as *Sedum edule*; the specific name was given because the Indians of the Coast used the young leaves as food. As these Indians eat everything from acorns to grasshoppers, we can not, upon their evidence that it is edible, add this to our list of garden vegetables.

Keeping Celery in Winter.

BY PETER HENDERSON.

[Last winter was so mild over a large portion of the country that great difficulty was found in keeping celery, and the losses were often heavy. Though written last January, this article is of more use now, when growers of celery are thinking as to the methods of storing their crops. One would suppose that so simple a rule as "govern the amount of covering

by the temperature," would be observed by every one. But experience last winter showed that it was not, and it seems to be necessary to repeat the simplest directions year after year.—Ed.]

A correspondent from Harrisburg, Pa., writes me under date of December 24th, as follows: "I have followed your instructions, given in 'Gardening for Profit,' of how to preserve celery in winter, for the past four years, and never failed until this season. Can you tell me why it is that my celery is rotting? Please reply in the *American Agriculturist*, as the answer may then benefit others as well."—Yes; the reason is easily explained. In almost every section of the country the season has been unusually mild—warm, in fact—consequently if you covered up your celery in the trenches, at the usual time of covering, nothing could prevent it beginning to first make roots prematurely, then to blanch or become white, and eventually to rot. In this vicinity (Jersey City Heights) we have scores of old celery growers, some of them growing half a million roots annually, and quite a number of them blundered just as the Harrisburg man did. The consequence was that the New York market last year was flooded with celery from the middle of December to the middle of January, so that instead of selling at the usual and paying price of 3c. per root, it has not averaged 1c. per root for all sold between these dates, to say nothing of probably one-third of it having rotted entirely. Now there was no occasion whatever for this loss, for there was no necessity to place any covering whatever on celery in trenches in this district, until the 28th day of December.

We grew some 10,000 roots ourselves from which to raise seed, but allowed it to remain uncovered until that date, and it is now nearly as green as when it was put away. By taking the precaution to have the covering placed along side of the trenches in heaps, ready to throw on on the approach of a cold snap, all danger of being caught by frost can be avoided, for a cold snap never comes so suddenly but that there is time enough to cover up before harm is done. In this matter, as in many others in gardening operations, the most successful cultivator is the one who does not follow blindly any given directions, but who will exercise his common sense when the exigencies of climate or any thing else require him to deviate from the beaten track of the usual practice.

Winter Bouquets, Grasses, etc.

As usual, at this season, we have inquiries as to the preparation of grasses, flowers, etc., to use for winter decorations. In 1874, we published a series of articles on this subject in which were given the results of our own experience, with such information as could be gathered from trustworthy sources. Those who have the volume for that year will find in the several numbers for August, September, October, and December, an article in which these matters are treated in full. It is not practicable for us to go over the whole ground again, in the same detail, but for the benefit of new readers, we give the principal points, referring those who wish for further particulars, to the articles in 1874. In Europe, the preservation of flowers is a regular business carried on in large establishments and employing many hands. Great numbers of these flowers are imported by our dealers, both made up in wreaths, bouquets, baskets, etc., and in bunches or clusters all of one kind. Most of the made-up affairs are not of a kind that appeal to our taste, the object being, apparently, to crowd the greatest possible variety of the most positive colors—even to black (!) in each design. The effect, as a general thing, is artificial and tawdry.

As to Grasses.

These are largely imported, and of late years some dealers have offered many of those collected in various parts of this country. These for the most part are dyed of various brilliant colors, and look to our taste, so thoroughly unnatural, that we are repelled rather than attracted by them. The pleasing effect of grasses is in form, rather than in color,

and when we see specimens which are naturally of a soft green or straw color, dyed with the most intense crimson or blue, or of a green, the like of which no grass ever presented, the eye is arrested by the "stunning" color, and takes no note of the beauty of form. Others load their grasses with crystals of alum; and worse yet, others are given a metallic appearance by the application of bronze powders. We can describe how these things are done, but we can not find beauty in them.

The Time for Collecting Grasses.

Each month there will be some grasses in season, and though many of the earlier ones have gone by, there will be found, during this month and next, a sufficient variety, especially of the larger kinds. As some of the most pleasing kinds are of no agricultural value, they are not generally known by common names, and to give their botanical names would be of no use except to botanists, who do not need them. We therefore simply say, that by road-sides, in meadows, and especially in moist and swampy land, grasses are to be sought for. Not only the more showy kinds, but those which have delicate, fine panicles or flower clusters should be collected. Secure long stems, and cut away the leaves. In most grasses the upper joint that bears the flower cluster will pull out readily from the sheathing leaf; this will often leave the stem too short to make up conveniently, and it is better to take several joints of the stem and cut away the leaves. If one can choose the time for collecting, the grasses should be watched as they develop, and taken when in flower, which may be known by the protrusion of the *anthers* or the feathery *stigmas*. Some grasses if gathered much later than this, will drop portions of their flowers, or shed their seeds in an unpleasant manner. Still, if one is but temporarily at a locality, a desirable grass should be taken in the condition it is found at the time.

Drying the Grasses.

Those in which the panicle is graceful and drooping, should be dried so as to preserve the natural form. If such are tied in bunches and hung up carelessly, they will be disappointing when dry. A handy method is to have a broad and not very deep box of sand, and stick the stems in this. Those kinds in which the flowers are in a close and spike-like cluster, may be tied in convenient bunches and hung up, heads down; a little practice will teach the proper treatment if it be remembered that the form in which the grass is dried can not be afterwards changed. Any airy place will answer for drying, such as an unoccupied room, or an old-fashioned garret. When the stems are quite dry, the flower cluster will be so; and if the drying place is not quite free from dust, they should be put away from dust and from flies, which are very fond of collecting upon them.

Besides the True Grasses

there are various members of the Sedge Family that are worth collecting, especially the Cotton-grasses (*Eriophorum*), which show their white and brownish plumes in the boggy meadows. Indeed, whatever plants by grace or beauty of form commend themselves to the collector, should be gathered, without reference to botanical relationships.

Preserving Showy Flowers.

While grasses are as much flowers as roses and camellias, they are not popularly so regarded, and in the trade, "preserved flowers and grasses" are offered. We compromise the matter by calling the others "showy" flowers, of which a large number are prepared abroad. The class of annuals known as "Everlastings," are cultivated by many with a view to the use of their flowers in winter decorations. The majority of these require only to be picked as they just come into bloom, carefully dried and kept from the light and dust until wanted. A large number of the imported flowers are preserved by means of sulphur fumes, the process being precisely that used in bleaching straw hats. A box or barrel is provided, which, if not tight, may be made so by pasting paper over the joints; this should have a small opening near the bottom to admit air, which can be closed when needed; a few inch and a half holes to be stopped

with plugs will answer. An arrangement should be made to support crosswise sticks at the top; a tight fitting cover and an old iron pan, or flower-pot with the hole plugged, to hold live coals, complete the outfit. The flowers are tied in small clusters in such a manner that the fumes can reach all parts, and hung upon the cross-sticks, live coals being put in the pot or pan, a few lumps of sulphur are thrown upon them and the cover placed on; if the cover does not fit closely, put folds of wetted cloth under it and a heavy weight on top. When the box or barrel is well filled with fumes, close the lower air hole and leave all untouched for 24 hours. At the end of this time, remove the flowers and hang them in an airy room to dry. When quite dry they may be laid away in boxes. All flowers do not succeed equally well, and there is room for experiment. Among those we found most satisfactory were, China Asters, Fuchsia buds, Larkspurs—the dark colored kinds, Red flowered Spiræas, Golden-roses, Roses—the red well filled and not over-blown ones answering best. As a general thing, the flowers are better if taken just as they are opening; some, such as the Fuchsias, even in the bud, to be opened afterwards. Some flowers after sulphuring will be quite bleached, others will have the color heightened; but the color in most can be restored, as we may show in speaking of making them up.

Village Improvement.

Some Important Suggestions to Beginners.

Mr. Canning, the author of the article on this subject in the August *American Agriculturist*, and Secretary of the Laurel Hill Association, makes the following additional suggestions for the guidance of those who are about to combine for the purpose of Village Improvement—suggestions which his experience has found to be of primary importance:

1. Have available funds at command before striking a blow—funds sufficient to accomplish something noticeable before the community.

2. In order to preclude the inevitable consequences of a mere spirit of ardor, the decline of interest as it becomes an old story, and to secure permanence to your organization, arrange for a subscription of a fixed sum for three years, at least—longer, if possible. The extent of your operations can then be intelligently forecast and accomplished.

3. By all means have the ladies of the place engaged in the plan at the outset, and give them full representation upon the Executive Committee.

4. Don't undertake too much at the start. Operations were better confined to some greatly needed betterment, and success there, will, as in case of a partially constructed rail-road, prompt to continuance in the same line.

5. Hold the meetings of the Executive Committee, regularly, as often as monthly, and from house to house, during the working campaign. The important element of *sociability* will thus be incorporated, and tend materially to activity and success.

6. Let each particular department of work be placed in the hands of a sub-committee, with an efficient chair-man or woman, who shall, at each meeting, report its proceedings since the last.

7. Have all labor accounts examined by a competent officer, and all drafts upon the Treasury countersigned by the president or other authority.

8. For obvious reasons, have your Association chartered under State law.

The Red Cedar from Seed.—The seeds of Red Cedar rarely germinate until they have lain in the ground for a year. Instead of sowing such seeds and keeping a large surface clear of weeds for one season, nurserymen resort to what is called "stratification." The seeds are made into a heap, with alternate layers of earth, and the whole covered with several inches of soil; or the seeds may be mixed with earth in a box with holes in the bottom, which is to be plunged in the soil up to its edges. In either case the seeds will be subjected to the same alternations of temperature and mois-

ture that they would experience if sown. The next spring, the seeds, if large, may be separated from the earth by a sieve, or if small, earth and seeds together may be sown. Like most other seedling evergreens, the Red Cedar needs shading while young.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Common Weeds Made Ornamental.

Last fall we saw in a New York seed-store among dried and colored grasses, and other materials for winter bouquets, a box of curious balls of down, each about two inches in diameter. The dealer did not know what they were, and as they were too delicate to allow of thorough examination, the only clue to their real nature was the bit of dried stem attached; and from this we guessed they were in some manner prepared from thistles. Walking with a lady in the country this summer, we jocularly proposed to add a thistle to the flowers she was gathering. "But do you know," said she, "what a pretty ornament can he made from the thistle?"—Then the mystery of the puzzling balls was solved. The large common Thistle is best for the purpose, and the manner of treating it may be shown by a rough drawing. The thistle deprived of its armed leaves as in figure 1, has a green prickly cup, *a*, and the showy or colored portion, *b*, which really consists of a multitude of separate little flowers, or florets, each complete in itself; these are attached to the bottom of the green cup, and are held together very closely by its upper edge. The bottom of this cup on which all these flowers stand, the botanists call a *receptacle*, and in the thistle it not only receives all these little flowers, but mingled among them a vast number of pure white delicate hairs, which are too soft to deserve the botanists name of "bristles." It is these hairs or bristles that make the ornament in question. To get at these, first cut away the leafy cup a little below the middle, about at the point, *a*. This will require some care, and a sharp knife or small scissors. It will be found that this cup, or "involucre," is not a solid piece, but is composed of numerous leafy scales, closely overlapping one another, and most of these scales are each tipped with a sharp prickle, as careless handling will soon demonstrate. All the green scales of the upper half of the cup being carefully removed, and some of the innermost are very delicate, then commence to pull out the purple florets a few at a time. As each of these has very fine hairs attached to it, do not think that the wrong material is being removed; if the florets are taken by the tips and pulled gently they will come out all right. Slow progress will be made at first, as the number of these little flowers is something astonishing. When the last floret is pulled out, the thistle will appear as in figure 2, with the remains of the cup, *a*, and a dense brush, or short

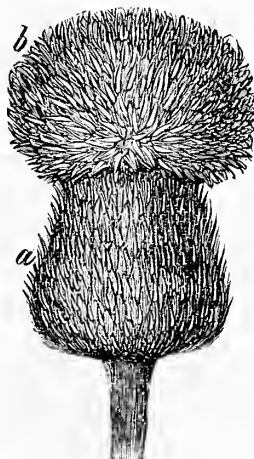


Fig. 1.—THISTLE HEAD.

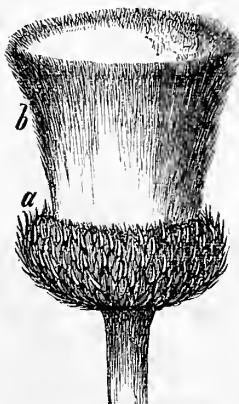


Fig. 2.—PREPARED THISTLE HEAD.

plume of the white silky hairs of the receptacle. But this is by no means a ball of down. For that, we must trust to nature, for art has done all it can towards it. Hang the thistle head prepared, as in figure 2, in the sun, and the rest will do itself. These thistle balls may be kept suspended or put away in such a manner that they will not lose their shape, until wanted for winter bouquets or other decoration. We perhaps should not have given so much space to describing this, did it not at the same time give an instructive lesson in the structure of the thistle head, and through that a general idea of the arrangement of the flower heads in the great Composite Family of plants to which the Thistle belongs, in which the same plan or idea is worked out in their structure in wonderful variety.

The Common Ox-eye Daisy, or White Weed,

that pest of the farmer, who ever supposed that anything interesting or amusing could come of that? The lady referred to (an artist in many ways), as another lady saw the possibilities of a beautiful head in a lump of butter, saw in this commonest of weeds a possible head, which is here represented in figure 3, that its beauty may be manifest. In the Ox-eye Daisy we have another composite, its green-cup, small and flat, and two kinds of florets, the



Fig. 3.—FOR THE BUTTON-HOLE.

yellow disk and the white ray flowers. Removing some of the ray florets altogether, clipping the others to form the cap border, or *halo*, leaving two in proper positions for the strings; it only needs the features to be put in with pen and ink, to show how art can improve upon nature. With a bit of green this makes a button-hole bouquet quite unlike any in Miss Hassard's work on floral decorations, and the prepared flower heads, may be preserved for use in winter at fairs and otherwise.

Home Topics.

BY FAITH ROCHESTER.

Our Children and the Wicked World.

A little boy of five years is shut away from the wicked world by the loving care of parents and friends, in order that he may grow up free from the faults and vices that infest society—a model of all the virtues. It is proposed that he shall receive his education entirely by private instruction, until he goes away to college. No playmates are allowed him except such as are approved by his parents—"good" children, of course. I do not know exactly how this plan will work, but I feel sorry for the child, and sorry for his parents. I am afraid they believe in the "white paper" theory—that each babe is like a sheet of pure white paper upon which the parents may write just what they please, so that his character at maturity may give the exact impress of their efforts to train him. Now, I have never had any of this "white paper" to deal with. Neither have I ever seen any. I have seen children who were certainly negative enough to rank as blank paper. It might seem that you could do almost anything with them, for you could easily "twist them around your finger," so to speak; but you could never make anything really good or great of such children. It is my belief that, instead of coming into the world mere blanks or sponges, these children are all heirs of Human Nature, with its untold capacities for both good and evil. I have never seen two alike, even in the same family. The natural dispositions are various, and different temptations affect them variously. It is, indeed, a wicked world into which they have come; but it is the world in which they must live and do their work as men and women. It is a very important part of their education that they should learn the ways of the world—not that they may practice all its arts, but that they may have some idea of what

they have to deal with, and be prepared to judge wisely in practical affairs. William's father would not let him go to the menagerie for \$100. Allen's father lets Allen go to every one that comes along. Indeed he quits work and goes himself every time. Neither father seems to know how to make the best use of that institution called "the menagerie." I suppose every boy who sees the gorgeous pictures on the walls about town, and sees and hears the triumphant procession of the incoming show, has a strong desire to go inside the big tent, and see the wonderful performances there. Why shouldn't he go? I suppose such shows have some objectionable features, but not so many or so striking, I am told, as they had ten or twenty years ago. There are certainly some educational features, not easily obtained in all parts of the country, as there is always an exhibit, more or less complete, of strange and foreign animals. I can imagine a wise father sympathizing with his children's pleasure over the glowing pictures, encouraging their curiosity about the animals by bits of zoological information, and explaining how horses are trained, and what use or what foolishness there may be in the skill of the circus rider and his horse. I can imagine him promising the little ones that he will take them to a menagerie when they are old enough, and explaining to them how wearisome and comparatively unprofitable it would be for them to go before they are old enough to see the show without undue fatigue, or to remember the different animals distinctly after seeing them. The children of such a father wait patiently for their time to come, as they see their father quietly going about his business in spite of the excitement, and in the meantime they have more rational amusements.

How to Gain Strength.

I am deeply interested in the efforts of some of my acquaintances to gain strength, and become healthy women—all the more interested because I have lately had to make some particular effort in that direction myself, being unusually wearied by a hard winter's work. How we shall all come out I can not say yet, but I am firm in the belief that my way is the best way. They all have doctors, and I have none. I confess I wanted one very much indeed to give me good advice, but I couldn't afford to put myself under a doctor's care; and I knew very well, too, what a good doctor ought to say to me, and I couldn't afford to follow his entire prescription, which would be largely of rest and freedom from care. One of my friends pays her doctor by the mouth for treating her. *He has never seen her*, but she has told him by letter her symptoms, and he sends her medicines, and gives her advice by letter. The disease which he tells her that she has is supposed to be the result of improper medicine in the first place, but the dear woman takes the medicines of the new, strange doctor, in undoubting confidence, and thinks she could not live without them. There is too much of this "blind leading the blind." My sick friends who are troubled with so much general weakness and "all-gone"-ness, are obliged to add to their tea and coffee stimulants, beer and wine, one or both, as invigorators; and yet they don't get strong. I seemed to be breaking down, too—have been walking along close on the brink of it, with what caution I could, for a long time past. I was afraid any common sort of doctor would want to go to toning me up with medicine, and I never would take his stuff, for nothing was the matter with any part of me except tired-outness. A doctor of good sense ought to tell me to rest, and I have gone into that business as well as I am able. As little hard work and care as possible, all the quiet out-door life I can get, plain, nourishing food, with a good proportion of ripe fruit—that is my own prescription, and with the help of a good, kind girl, and the kind consideration of friends, I expect to pull through. No doubt some things are more strengthening than others when put into the human stomach as food or as medicine, but I have no faith in anything which professes and really *appears* to give strength without imparting any real nourishment to the system, which simply makes a person feel strong as a re-

sult of taking it, with a reaction of weakness after the effect of the stimulant is spent, until the dose is repeated and gradually increased as the system grows accustomed to the artificial stimulation. No doubt medicine may act as a corrective of a bad state of the system, impure blood, or a clogged liver. But you can get your blood purified, and your liver unclogged, without resorting to medicine, if you choose, simply by ceasing to do evil, and learning to do well physically. Make your blood of wholesome, nourishing, well-prepared food—the most healthful meats, the best of grains, the freshest vegetables; and for drink depend as much as possible upon juicy, ripe, unspoiled fruit, with pure water when needed. Purify the blood so made by full breaths of clean, fresh air, taken into the lungs where the blood is constantly passing for such purification. Keep the blood in healthy activity of circulation by judicious exercise, both in the way of useful work and in jolly games, and give yourself plenty of sleep in the purest air you can obtain. Living in this way, you can afford to "throw physic to the dogs," and you will find it the cheapest way in the end, as all good doctors will tell you.

Cleansing Laces.

Just what kind and degree of culture is necessary to make one scorn the use of any lace except that which is known as "real," I can not exactly say, nor have I any wish to reach that high degree of social culture. The finest hand-made lace is a rare product of human skill and patience, but I have read that the very rarest and richest in fineness and delicacy, and fullness of design, is made in damp unwholesome cellars, by women who wear out their lives in the sickening business. It can not be made in dry, fresh air, moisture being a necessary factor in its production. Slowly, painfully, the beautiful pattern is wrought, stitch by stitch, of the finest material, and of the bodies and souls of our sister women. You and I can do without it, and let fewer life drops fall in consequence. Indeed we must do without it, most of us, it is so exceedingly costly, and I hope we neither envy those who are able to wear it, nor feel like crying "sour grapes" about it.

But real Valenciennes and thread lace sometimes come within the purse range of people who can afford to read the papers. It is poor economy and poor taste to wash and iron these like common rags. A much better method seems coming into common use, and nearly all laces good enough to wear at all, should be washed in this way. This includes lace and tatting collars, pieces of footings, and also the better kinds of machine-made lace.

Take a large-sized bottle—a common junk bottle will do—and wind it smoothly with several thicknesses of white cotton, or at least two thicknesses of clean white flannel. Fasten this smoothly. Begin at the lower end of the bottle and wind the lace around it, the scalloped edge down, bringing it around so that the edge of each row just overlaps the straight edge of the preceding row. With a fine thread baste the lace in position, pulling it out evenly, and snug, but not stretched, over the flannel. Over this wind carefully two thicknesses more of white flannel or stout cotton cloth, sewing it snug. Put this into a kettle and cover it with soft water, in which sufficient soap of the best quality—White Castile, if you can get it—has been shaved to make a good suds. To this add a small half teaspoonful of borax, or a few drops of aqua ammonia. Let it come to a boil, and continue boiling only a few minutes. Set off the kettle, and remove the bottle when the water is cool enough to allow pressing out the suds gently with the hands. To rinse and starch the lace—put the bottle into a kettle of clean water, stirring in a few drops of bluing and stiffening of some kind. Rice flour starch is said to be the best, but well made common laundry starch is used, and simple gum-arabic water is recommended. When this water boils, take the kettle again from the fire and partially cool the water by standing. Press out all the moisture possible, then hang the bottle in the sunshine until its wrappings are dry. Rip off the outer flannel and remove the lace. If the edge does

not look even and new, pick out the pearly with a pin. Of course the lace should not be ironed.

This involves some trouble, but if one wears nice laces, it is worth while to take care of them. If they are laid away after every wearing in a mixture of powdered pearl starch and magnesia, they will seldom need washing. For common use and children's wear, thin muslin ruffles and pleated footings are serviceable. I buy the footings, all pleated and doubled so as to make a double ruffle, at ten cents a yard. Washed and starched with the fine clothes, and ironed without unpleating, it makes a full double ruffle with a straight edge, and is as little trouble and as cheap and pretty as anything for children's common use.

House Decorations.

A sister who inclines to help me bear my burdens, says in a late letter: "Do you ever write of house decorations?" Very little indeed, I might reply. I have no time to make the pretty little ornaments, and not much taste for many that I see in other people's houses.

I shook hands with Thoreau (in spirit), many years ago, when I read his "Walden." He wondered how people could clutter up their houses with so many things which must be dusted and taken care of daily or become a nuisance—with collections of things which are beautiful in their place—but mere rubbish in our houses.

Still, I do know that little touches here and there, brighten up a room and make it cheerful and homelike, instead of bare and barny, and each homemaker must judge for herself what she can afford, and what best use of her time she can make.

Sister, writes: "I have seen some very pretty and inexpensive lambrequins for brackets or shelves, made of scarlet or navy-blue opera flannel, or ladies' cloth, on which are sewed figures cut from lace curtain material. A yard of curtain material contains enough to go a great ways, and some of it has very pretty figures of ferns, etc., which can be arranged to suit the taste. Across the room, this looks like bead-work, and it requires very little time and labor. The edge may be pinked or bound with thin, white muslin."

"Persian rugs are quite in fashion, and very pretty. The ladies use remnants of Brussels' carpeting, cut in strips about a finger and a half wide, and then ravelled. Then they knit strips about a finger wide, garter-stitch, with strong twine, knitting in, in loops, the ravelled Brussels' yarn, shading it to suit themselves. These rugs are very durable but at the same time they are slow to make."

The Management of the Washing.

BY "CERES," HOWARD CO., MD

I confess to a little surprise that "Faith Rochester," who evidently brings so much thought to bear upon everything connected with domestic economy, has not yet, as indicated by her article in May last, come to repudiate all washing fluids, chemical soaps, and the like. In this respect, at least, I am in advance of her, having tried many of them, and being in turn an advocate for most of them, until disgusted with each. I have come back to first principles: *pure* soap and good management in the use of it. I am satisfied that when chemical preparations are used, in soaps or otherwise, the clothing will not last nearly so long, and will not retain a good color or smell without special care. I have, until lately, allowed my wash-women to take their accustomed course, which usually is very similar to that described in the article above referred to, not, however, forgetting my own early lessons, which often led me to put my nose into the middle of a basket of clothes just from the clothes line, to ascertain whether they smelled as sweetly as they used to "at my mother's." The verdict was invariably against them, however nicely they looked. A new wash-woman, and one not past the teachable age, led me to try whether my mother's practice would work as well in these days, and the result is so satisfactory I am tempted to give it to the "American Agriculturist family."

The clothing for the week's washing being duly

assorted, it is well to place coarse and badly soiled articles by themselves in warm suds, to soak until you are ready for them. Then take the colored clothes, wash, rinse, and starch, and hang them out to dry; flannels, also, should be disposed of in the early part of the day. These done, proceed to the white clothes. A little soaking in as warm suds as can be conveniently managed, is undoubtedly a help, and with that and the washing through two good suds, kept as clean by removing as your supply of water will admit of, brings them ready for scalding (not boiling.) One should never have less than three tubs to use in a family washing, and four are better. Into the deepest tub you have, throw the garments as they are washed from the second suds, shaking them loosely, and rubbing a little soap when there is any indication of its being needed. When the tub is nearly full, or you have all the clothing of that class in, pour over it boiling water in which a little soap has been dissolved, until they are well covered with the water; then cover the tub with a blanket, or whatever will hold the steam, until you can bear the hand in to wash the clothes out of this water. As this is the last of the washing, every part should be carefully examined and have whatever rubbing may be necessary; wring lightly, as the suds helps the bleaching, and spread on the grass, where the sun will fall on them the rest of the day, and keep them wet by an occasional sprinkling from a garden watering pot. This scalding has to be repeated if you have more than one tubful of clothes. With the coarsest and most soiled articles, there is no objection to boiling for a few moments, but I would advise taking from the boiling water into fresh, clean suds, before putting out on the grass. This part of the washing can be accomplished, and everything cleared up, by one or two o'clock, where there is a good, large wash. As the clothes should be left out to bleach all the afternoon, this part of the day can be utilized, if you are hiring by the day, in having the calicoes ironed. As late as you can conveniently do so, have the clothes taken from the grass, still keeping the coarse and fine ones separated, and put to soak in a liberal supply of clear water. The next morning, have them rinsed from this water, or one slightly blued after it. If dried under favorable circumstances, they will look so white and smell so delightfully pure and fresh, it will be a pleasure to wear them, and you will have the comfort of knowing your clothes wear out, instead of washing out—a much slower but more satisfactory process.

Household Notes and Queries.

"PARKER HOUSE ROLLS."—These very light, delicious rolls, which are generally obtained in perfection from the bread-bakers only, we recently found home-made, equal to the best, at Mrs. L. J. Post's "Maplewood Mansion," Ellenville, N. Y. The recipe was solicited and tried at home with good success. Here it is: Sift 4 quarts of good flour; take 1 quart warm milk, and melt in it 1 teacupful of butter, and add 2 tablespoonfuls of white sugar, a teaspoonful of salt, $\frac{1}{4}$ teacupful of baker's yeast, or its equivalent yeast cake. With these and part of the flour make a soft sponge at night if wanted for breakfast, or in the morning if for tea. When the sponge is light, early in the morning, or in the afternoon, add the rest of the flour, and knead as for bread. Roll out as for tea biscuit, and cut out in round forms about 3 $\frac{1}{2}$ inches in diameter. Grease about half the surface with butter, and lop it over, not quite half way. Let them rise in a warm place half to three-fourths of an hour, and bake quickly.

THE QUEEN OF PUDDINGS AGAIN.—This time the recipe comes from New Zealand, for which we return thanks. We suggest to our friends that we are so well supplied with this recipe, that they need not be at the trouble of sending any more.

LIQUID STOVE POLISHES.—Some, at least, of these need to be used with caution, as they contain naphtha, a highly inflammable fluid, which it is dangerous to have about. A case is reported in the New York daily papers, of a death which resulted

from the "explosion" of "Boynton's Liquid Stove Polish." The explosion was probably of a mixture of the vapor of the naphtha with the air. Selling this liquid in any form, should be restricted by law. Employing it in an article to be used in families is simply wicked. Avoid all such stove polishes.

MAKING PICKLES.—The accumulation of inquiries from new readers make it necessary to repeat certain points in pickle making, each season. The inquiry generally is: "How can I make pickles like those sold in glass jars?"—To answer this and others in brief,—really good pickles can not be made by putting cucumbers, etc., directly into vinegar. Salting removes natural juices, and allows the vinegar to penetrate the cucumber throughout. Some pickles may be made from cooked vegetables without salting; and ripe peaches and other fruits are pickled without salting, using boiling vinegar. Pick the cucumbers daily, always with the stems on. Wash, if needed, and place in a barrel, sprinkling salt among them; half a bushel of best salt is required for a barrel of pickles. Place a cover weighted with stones on the pickles, and add water to reach the cover. If few cucumbers are gathered daily, it may be more convenient to put them into a jar or keg of brine made strong enough to float a potato, using a weighted cover to keep them down. About four weeks are required to thoroughly salt them, and they may be kept as much longer as desired, by care in replenishing the brine if need be. All bright green pickles are made so by copper, indirectly used by preparing them in copper cauldrons, or directly, by the intentional use of verdigris. The attractive appearance of the pickles "sold in glass jars," is due 1st to this greenening, and 2d to the use of colorless vinegar. That sold as "White Wine Vinegar," is made from whiskey or other form of alcohol; it is just as wholesome as any other, but is merely sour, without the pleasant fragrance of pure cider vinegar. Those who regard quality rather than appearance, will use cider vinegar only for their pickles. Green tomatoes, string beans, etc., are treated the same as cucumbers.

BOYS & GIRLS' COLUMNS.

The Young Microscopist's Club.

"What, more insects?" some of you perhaps will say. How can I help it? I propose to answer the questions as well as I can, sent by the members of the Club; and if nine out of ten of the inquiries are upon insects, the replies must be somewhat in proportion. A box came a few days ago, which, when opened, appeared at first sight to contain some leaves nicely packed in cotton, but as the cotton began to move and soon became rather lively, I saw that it was a specimen of

The Woolly Aphis, or Woolly Plant Louse, which is in some parts of the country unfortunately too common. If you see, especially upon young fruit trees what look like patches of white mould, or if you find a twig that appears as if some one had wound it loosely with cotton or wool, as in fig. 1, you will do well to take a specimen home and examine it with your Microscope. While the surface of the mass is of white threads, you

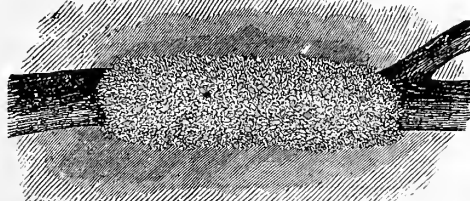


Fig. 1.—WOOLLY APHIS OR "AMERICAN BLIGHT."

will find by looking below the surface, a very lively lot of small insects, little blackish plant-lice, about one-tenth of an inch long; one of them is shown of the natural size in the upper part of figure 2. But the threads—almost as white, but coarser than cotton fibres and most wool—where do they come from?—That is the curious part of it. They come from the body of the insect, which seems to have the power of producing them as needed. The lower part of figure 2 shows one magnified, with the tuft of threads. You may ask

"What this Wool is for?"

It is said that it allows the insect to be carried for long distances by the winds, and one of its uses may be to

scatter it abroad, but I think its chief use is to conceal this plant louse from its enemies; it must be a sharp-eyed



Fig. 2.—APHIS.

little bird that can see anything like food in this mass of wool. It is curious to see how their instinct leads them to huddle together in masses; a single insect does not seem to have wool enough to hide him, and they seem to know that by getting together in large numbers, they can help one another, and make a more complete hiding place. So the little fellows stick their bills into the tender bark of our young trees, and suck away for a living, while they are well concealed from their enemies. "But do they not injure the trees?"—Indeed they do; on this account they are called, in England, where they are very plenty,

"The American Blight,"

which is hardly fair to this country, as the insect came to us from the Old World. They are sometimes in such numbers, so rapidly do they increase, as to destroy young orchards. They are easily killed by the use of soft-soap, brine, or whitewash, put on with a brush. The scientific name of the Woolly Aphis is *Eriosoma lanigera*. The first name is from the Greek for "woolly-body," and the other is the Latin for wool-bearing.... Another insect common in greenhouses, and sometimes found on house-plants, hides itself in a similar manner to the one just described, viz., the well known

Mealy-Bug

of the gardeners. This is often found alone in forks of the stems of greenhouse plants or on the veins of the leaves. It is not a plant-louse, but belongs to another family,—the Scale insects. This is able to cover itself with wool, which rather than hiding it makes it the more easily seen on the green surface of the plant. Like other scale insects, it fixes itself to the plant while very young, and does not move afterwards. The insect without the "meal," or wool, is, according to Doct. Packard, that shown much enlarged in fig. 3. When covered it is a shapeless tuft of down. When there are not many they may be picked from a plant with a small sharp-pointed stick, or may be touched by a small brush dipped in alcohol.... Here is an inquiry not about insects. "T. G." wishes to know if our Microscope will show all the parts of ferns, and how, in collecting, to tell a fern from a moss. No, it would take a very costly instrument to "show all the parts of ferns," but it will allow him to see all the parts that are used in studying ferns, to tell one kind of fern from another. As to telling a fern from a moss, it will be better for me in the first place to briefly answer the question,

"What is a Fern?"

as this has also been asked by several others. Our ferns generally have their stems below-ground, from which arise the leaves (often called *fronds*), and these in the majority of kinds are rolled up in the bud in a graceful shape, as if the rolling had begun at the end, so that the leaf as it is coming out is in the shape of a bishop's crozier, as in figure 4, which shows two buds. On the veins, on the underside of the leaf, or along its margin in some, you will find a great number of dots, some round, and others long, which are called *fruit-dots*, and these serve mainly to distinguish ferns from other plants. I should have stated in the first place that ferns belong to the great series of



Fig. 4.—FERN BUD.

Flowerless Plants;

they have no proper flowers and produce no proper seeds, like the common plants we are familiar with, and though these spots on the back of the leaves are called "fruit-dots," it only means that they answer the same purpose that fruit does in other plants—that is, that they are concerned in producing new plants. Figure 5 shows a bit of a

fern frond, with the fruit-dots on the under-side; each one of these dots is, when young, covered with a little shield, which, when the plant is old, is often not easily found. Under this is a cluster of curious bodies called *spore-cases*, and very pretty things they are, when you examine them with the microscope. They are usually brownish, each little case upon a stalk, and around the case a jointed band, as seen in figure 6. When the spore-case is ripe, this band straightens out, and tears the case open to let out its contents. Being a spore-case, you will have guessed that the contents are *spores*. If you shake a fern leaf over a sheet of white paper, when these spore-cases are mature, you will collect a very fine dust, the spores; these are minute grains, some of which are shown in figure 6, which is of course greatly magnified. Each one of these minute spores can

Answer the Purposes of a Seed

in producing a new plant, but it is not a real seed, as it has not, like a true seed, a little plant, or *embryo* inside of it. The manner in which it grows to produce a new plant would hardly be understood by youngsters, and you must let that go at present, as one of the things to be learned hereafter. A few of our ferns do not produce

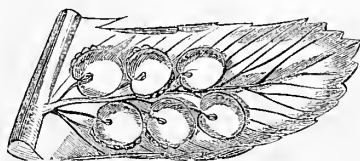


Fig. 5.—PART OF A FERN FROND.

their spore-cases in fruit-dots on the back of the leaves, but I can not now describe these. All the leaves you will find on a fern will not bear fruit-dots, these are called "barren fronds," while the others are "fertile fronds." You will find great beauty and a wonderful variety in the forms and markings of the ferns: indeed they are so delicate and graceful that many are gathered and pressed, to be used as ornaments, and to make

Fern Pictures and Bouquets.

To collect ferns for this purpose, a portfolio with paper should be taken on your fern hunt. Old newspapers between two stiff pasteboards will answer. The reason for this is that many of the most delicate begin to wither and curl up as soon as gathered, and by the time you reach home they will be useless. By putting them in press at once, this is avoided. As most ferns contain but little moisture, if plenty of dry paper be used but little changing will be needed. You should keep the ferns under pressure until you wish to use them in making up.—I shall have to tell you a little about mosses another time.



Fig. 6.—YOUNG FROND.

Aunt Sue's Chats.

C. C. F. wants to know "what will kill the nerve of a tooth—and what will remove freckles?"—You should apply to a dentist to kill the nerve; he killed one of mine very easily. Lemon-juice and many other remedies are proposed for freckles, but I never yet met any one who had been benefited by their use. If your skin is of the freckling sort, and you go out into the sun and air, you will get freckled; even if you should get rid of one set, you would soon get another. Your

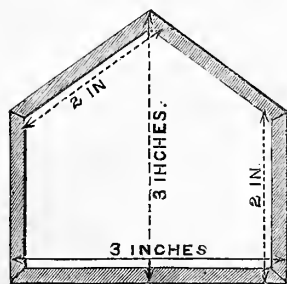


Fig. 4.—END OF SILK CASE.

best plan is to not care two cents about the matter, but to be pleasant and jolly, so as to make you and your freckles welcome wherever you may go.

MOLLIE.—A "diamond wedding" is celebrated seventy-five years after marriage. A golden wedding, fifty years; a silver wedding, twenty-five years; crystal, fifteen; tin, ten; wooden, five; and paper, one year.

MAMIE.—A very pretty "gift, for less than a dollar," is a Sewing-silk Case made of perforated card-board, ribbon, etc. Get a sheet of pretty finely perforated card, and cut from it two pieces, each of the size and shape of figs.

3 and 4, and one each, of figs. 1 and 2. If one of the large pieces contains about 120 holes the long way, and 50 holes across the width, cut the slits as directed by the number of holes in the pattern (fig. 2); otherwise you

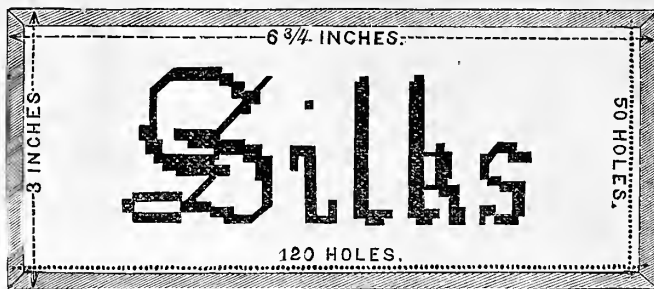


Fig. 1.—AUNT SUE'S SEWING SILK CASE.

must be guided by your eye. When cut they are lifted up slightly, to tuck the silk-winders under. On the other large piece, work the word "SILKS;" then put the two pieces back to back and bind them all round with lute-string ribbon $\frac{1}{4}$ of an inch wide (blue or any color you prefer). Bind all the other pieces, singly, with the same ribbon, then overhand them together as in fig. 6 (next page). Some little design may be embroidered on the pointed pieces, for ornament, or a pretty little picture may be stuck on each. Sew a ribbon-string to each point. Cut, out of plain white card-board, seven winders, the shape of figure 5. Wind two or three different colored silks on each winder, and tuck them in under the "slits." Cut one or two slits in each winder (fig. 5, next page) to fasten the ends of the silk after winding. The two side pieces (fig. 3) should just meet when closed over the silk-winders. Shut these up first, then turn the end pieces over and tie them together with ribbons.

Thanks for puzzles, letters, etc., to "Boby," Louisa J. S., "Little Boy," B. D. T., Effie S., C. M. M., Willie, Birdie, Sarah J. W., John J., Dot, Amanda G. C., Moppet, and G. W. Z.

Aunt Sue's Puzzle-Box.

CLASSICAL ACROSTIC.

The initials name a hero of antiquity; and the finals a mythical king of Italy, to whom was ascribed the introduction of agriculture.

1. A son of Zeus, who, even as a baby, displayed the qualities which betokened a capacity for mercantile pursuits.
2. A monster, the upper part of whose body was that of a maiden, while the lower was that of a serpent.
3. Was usually said of animals only, but Virgil said of man.
4. Is the typical part of the name of a promontory of the Tauric Chersonese.
5. Was one of the distinguishing appellations of "Gallia" or Gaul.
6. Was a priest of Apollo.
7. Is a Latin interjection.
8. Was a celebrated gladiator, who defied Rome in vain.

J. A. B.

NUMERICAL ENIGMAS.

1. I am composed of 29 letters:
My 12, 4, 23, 2, 6, is an Indian boat.
My 1, 13, 3, 8, is a title.
My 28, 19, 26, 17, 11, 9, is a field flower.
My 10, 29, 24, 27, is a vegetable.
My 7, 16, 22, 5, is proud.
My 15, 14, 3, 21, is a girl's name.
My 25, 18, 20, 19, is a place for money.
My whole is a proverb translated from the Latin.
ALBERT AND AUGUSTA.
2. I am composed of 9 letters:
My 9, 3, 6, is a kind of fruit.
My 2, 5, 6, 1, is a kind of fruit.
My 4, 8, 7, 9, is a piece of money.
My whole we should all acquire, if possible.
IMOGEN WELD.



Fig. 3.—SIDE-PIECE OF AUNT SUE'S SEWING SILK CASE.

HOLLOW SQUARE.

***** Top—is an inventor. Base—is moderately. Left side—is a countryman. Right side—to explain. First letter of top word is also first letter of left word. Last letter of top word is first letter of right word. Last letter of left word is first letter of the bottom word.
TRY AGAIN.

HIDDEN HOUSEHOLD ARTICLES.

1. Fred, is Harry ready to take a stroll?
2. Our walk was most romantic! Up hill and down dale.
3. In the afternoon we walked up and down the street.
4. Oh! Charlie is too liberal, altogether.
5. He says he doesn't care for King or Queen.
6. Does Mat owe less than Tom?
7. Please get me an extra yard for a pocket.
8. Sew the bow loosely on the side.
9. She was lovely;—nose classic, hair luxuriant, form perfect.
10. What a goose he was to veto such an excellent proposition.

CROSS-WORD.

My first is in blossom but not in leaf.
My next is in robber but not in thief,
My third is in hover but not in fly,
My fourth is in plodding but not in ply,
My fifth is in buzzing but not in hum,
My sixth is in finger but not in thumb,
My seventh is in liking but not in love,
My eighth is in pigeon but not in dove,
My ninth is in garden but not in plot,
My tenth is in drunkard but not in sot,
My eleventh is in anchor but not in stay,
My twelfth is in fodder but not in hay,
My thirteenth is in shilling but not in cent,
My fourteenth is in circus but not in tent;
My whole smooths many a pathway,
Dispers full many a fear,
It comforts many a sorrow,
And dries full many a tear.

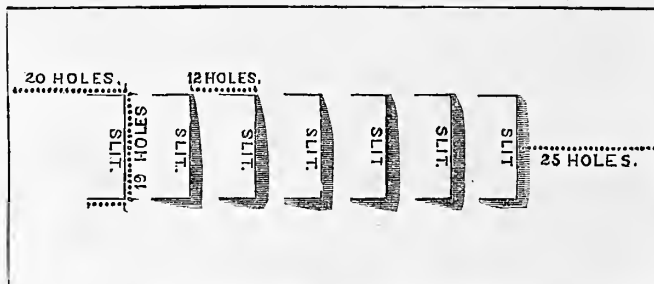


Fig. 2.—SEW BACK-TO-BACK WITH FIGURE 1.

SQUARE WORD.

1. Marks of injury.
2. To grumble.
3. An artery.
4. Calamus of India.
5. Axeltree iron.
- LITTLE FOLKS.

ANSWERS TO PUZZLES IN THE JULY NUMBER.

ENIGMATICAL BOUQUET.—1. Iris. 2. Tulips. 3. Sweet pea. 4. Candy-tuft. 5. Catchfly. 6. Dew-drop. 7. A rose.

PUZZLE.—CIVIL.

CROSS-WORD.—Bartholomew
NUMERICAL ENIGMAS.—
1. "That life is long which answers life's great end."

(Up to date [July 18th], Bessie [of Newburyport] is the only one who has sent an answer to this enigma.) 2. Fish geranium. 3. Sweet corn. 4. Harmonipon.

Correspondents will save time, if they will address their letters (to Aunt Sue) to Rowayton, Fairfield Co., Conn., from July to December of this year. But please remember that AUNT SUE is not Orange Judd Co.; the latter must be addressed at 245 Broadway, N. Y. City.

Aunt Polly's Visit to the City.

BY AUNT POLLY.

Well! 'Liza Jane, I'm glad to be to hum, though I did hev a nice time, and seen a powerful lot of things. I might as well begin to the beginnin' and tell you all about it. You see goin' as I did, rather sudden, there was no one there to meet me to the station; but Lucy's folks livin' near, I didn't hev no great amount o' trouble to find 'em. When I got to the front door, I jest stopped in wonderment, for there was two winders in it of colored glass for all the world like a church, and I think it's *persumin'* to imitate the House of God in that manner. Well, the door was opened by a colored gentleman dressed up *spruce*, I can tell you, with a white necktie, and gloves, if you please, to say nothin' of a swallertailed coat. And as I told Lucy afterward, I thought it was extravagant and highfalutin' to dress him so fine, and if she wanted, I'd send her the pattern I make John Henry's clothes by, and then she could make 'em herself. Well, when I said I'd like to see Mrs. Orson, if he didn't go and hold out a waiter; and I tell you I *was* scared, for I didn't know but what he wanted money, and as he see how surprised I was, says he, "your card, ma'am." Then says I, "I ain't got no card; you can jest go up and tell 'em Aunt Polly Beacon's come."

You ought t'hev seen the room I slept in. I allow t'was purty fine, but there was some things I didn't like about it. They told me to ring the bell if I wanted anything, but I didn't see no bell, only a row o' little knobs on the wall that I darsn't touch for the world. Then the

door—why I didn't know but I should get locked in and found dead years after, like that woman they sung about down to the town hall last spring, called the "Mistletoe Bough." There was so many knobs and handles on it that I thought I never'd get out. Why can't people stick to the good old latches that everybody understands. In the mornin' they showed me over the bouse, it must have cost a sight o' money, but things were mighty queer, I tell you. In Lucy's room they had curtains instid o' doors, and pieced they was at that! Why! they thought nothin' o' puttin' two or three kinds o' stuff together. When I saw the next room I was beat, for they had nothin' but pine furniture in it, and the carpet warn't big enough for the floor. Then there was

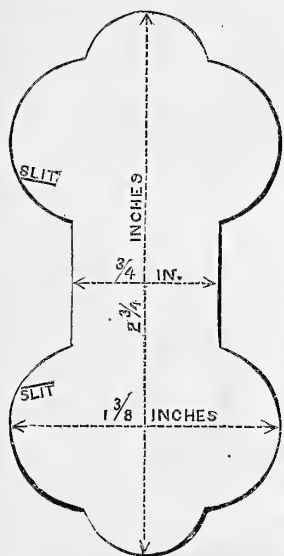


Fig. 5.—SILK WINDER.

a little settin' room, and they didn't have no carpet at all there, only a mat laid down; and the curtains they said was very rare, and I should hope they was, for I never see sech thin stuff in all my life, and of the strips of trimmin' on 'em, there wasn't two alike. And, if you'll believe it, there was three kinds of paper on all the chamber walls; just as if they didn't hev enough, and pieced it out with another kind. The little strips around the top they called a "freeze," and the one around the bottom a "dado," a "dado!" Did you ever bear anything so

silly! I was particular 'bout rememberin' them names, for I know'd you'd be struck when you heard 'em.

The keepin' room was queer, you'd better believe, (drawin' room, they called it, and I declare to goodness, I don't see the sense of half their new fangled names). There was a three-legged plauer in it, and them "dados," and "freeze," and against the chimney was a kind of little dresser that they had full o' chiny, (vases and pitchers and sich). Some of the vases they said, too, was more valuable than silver, because they had hand painting on them; but such daubs you never saw. Why our old rooster would a done as well if you'd given him the paint. The andirons I was took by, and if uncle Obadiah hadn't promised to give us bis'n when he dies, I'd a meb-bee-brought some home with me.

I didn't see a bit of white chiny while I was there, and what they did when they had company to tea, I'm sure I don't know. I never seed Faith Rochester write about any such thing in the *American Agriculturist*.

When I was in Almira's room, I seen what I thought was a clock, and says I, "where did you get such a pretty clock?" And says they, "laws! I don't touch that, or you'll set it off; that's the burglar alarm." And I tell you what it was, I didn't hev a minnute's pence the rest o' the time I was in that bouse, thinkin' what if the thing should go off, for I was forty times as 'fraid of that as I was of the burglars; and I suggested to Lucy that settin' a tub o' water to the head of the stairs was a very good way of frightenin' burglars.

When I seen the dinin' room, I just give up; for if they didn't hev fancy plates, they called 'em "placques," or some sech name, hangin' to the wall, and the ceilin'! Well, they had some painted ceilin's that was very han'-some, but this one—why I actually believe that after they got through paperin', they just took all the pieces they had left of every kind in the house, and pasted 'em onto that dinin' room ceilin'!

By the way, how'd the last churnin' turn out; and did my receipt cure old Miss Pipkin's rheumatiz?

ance of Dr. James Strong, S. T. D., the series of lessons below were prepared in 1860-1, and used for two years, and they were published in this Journal, February, 1862, and another series was issued in December, 1862, for 1863. Two other similar series from the Old Testament were subsequently issued, viz., No. 3, Adam to Elijah, and No. 4, Elijah to Christ. Hundreds of thousands of cards or slips, with these lessons, were called for and sent all over the country. In response to a general demand, four Question or Lesson Books were issued, entitled "*Lessons for Every Sunday in the Year*," Nos. 1, 2, 3, and 4, of which many hundreds of thousands were used in the Sunday Schools of all the leading Christian Denominations. This paved the way for, and led to the present International Lessons. (The dates for the lessons as first

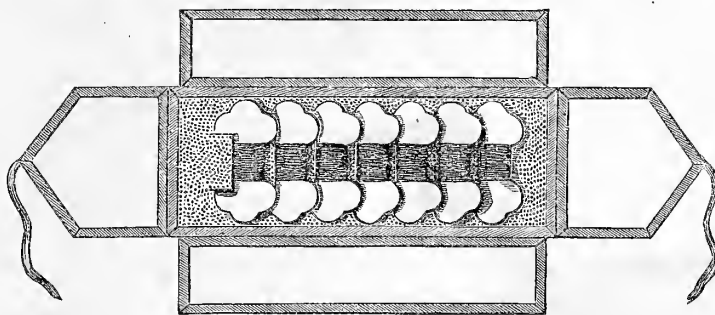


Fig. 6.—SEWING SILK CASE.

prepared for 1861, correspond with those of the present year, 1878). There was one advantage in this series not sufficiently provided for in the present series, we think, viz., that the children were expected to *commit to memory* an average of seven consecutive verses every week and they thus stored in the mind some 350 or more verses of the sacred text every year.

1861.	Subject.	Chapter.	Verses.
1. Jan'y 6	Angels at Bethlehem.....	Luke ii,	8 to 14
2. " 13	Visit of the Magians.....	Matt. ii,	3 to 9
3. " 20	Christ at twelve years of age.....	Luke ii,	42 to 49
4. " 27	The Baptist's Mission.....	Mark i,	4 to 11
5. Feb. 3	Christ's Temptation.....	Matt. iv,	3 to 10
6. " 10	Interview with Nicodemus.....	John iii,	1 to 8
7. " 17	Christ equal with the Father.....	John vi,	18 to 24
8. " 24	Doctrine of the Sabbath.....	Mark ii,	23 to 28
9. Mar. 3	Parable of the Sower.....	Matt. xiii,	3 to 9
10. " 10	Calling of the Twelve.....	Matt. x,	1 to 7
11. " 17	John's Imprisonment.....	Mark vi,	21 to 25
12. " 24	Christ the Bread of Life.....	John vi,	26 to 33
13. " 31	The Transfiguration.....	Matt. xvii,	1 to 8
14. April 7	Necessity of Childlike Temper.....	Matt. xviii,	1 to 7
15. " 14	Appointment of the Seventy.....	Luke x,	1 to 7
16. " 21	Parable of the Good Samaritan.....	Luke x,	30 to 37
17. " 28	The Lord's Prayer.....	Luke xi,	1 to 8
18. May 5	Christ the Good Shepherd.....	John x,	1 to 7
19. " 12	Parable of the Prodigal Son.....	Luke xv,	11 to 19
20. " 19	The Lord's Supper.....	1 Cor. xi,	23 to 29
21. " 26	The Agony in Gethsemane.....	Luke xxi,	39 to 46
22. June 2	Seizure of Christ.....	Luke xxii,	47 to 53
23. " 9	Peter's Denial.....	Luke xxi,	54 to 62
24. " 16	Christ before the Sanhedrim.....	Luke xxi,	63 to 71
25. " 23	Christ before Pilate.....	Luke xxi,	1 to 7
26. " 30	Christ before Herod.....	Luke xxi,	8 to 16
27. July 7	Christ Sentenced by Pilate.....	Luke xxii,	18 to 25
28. " 14	The Crucifixion.....	Luke xxii,	32 to 38
29. " 21	Death of Christ.....	Luke xxii,	41 to 53
30. " 28	The Sepulchre Guarded.....	Matt. xxvii,	61 to 66
31. Aug. 4	Resurrection of Christ.....	Mark xvi,	1 to 8
32. " 11	Christ's Appearances.....	Mark xvi,	9 to 16
33. " 18	The Ascension.....	Acts i,	6 to 12
34. " 25	Gift of the Holy Spirit.....	Acts i,	1 to 7
35. Sept. 1	Peter & John before Sanhedrim.....	Acts iv,	5 to 12
36. " 8	Community of Goods.....	Acts iv,	31 to 37
37. " 15	Martyrdom of Stephen.....	Acts vi,	54 to 60
38. " 22	Conversion of Paul.....	Acts ix,	1 to 8
39. " 29	Conversion of Cornelius.....	Acts x,	1 to 17
40. Oct. 6	Founding the Church, Antioch.....	Acts xi,	19 to 27
41. " 13	Paul delivered from Prison.....	Acts xii,	1 to 6
42. " 20	Paul appointed Missionary.....	Acts xiii,	24 to xlii, 5
43. " 27	Decree of Council at Jerusalem.....	Acts xv,	22 to 29
44. Nov. 3	Philippi Jailor Converted.....	Acts xvi,	25 to 31
45. " 10	Paul's Preaching at Athens.....	Acts xvii,	22 to 28
46. " 17	Turnut at Ephesus.....	Acts xix,	21 to 27
47. " 24	Arrest of Paul at Jerusalem.....	Acts xxi,	27 to 33
48. Dec. 1	Paul begins Voyage to Rome.....	Acts xxvii,	1 to 8
49. " 8	Storm during Paul's Passage.....	Acts xxvii,	13 to 20
50. " 15	Paul Encourages Mariners.....	Acts xxvii,	27 to 34
51. " 22	Escape from the Wreck.....	Acts xxvii,	38 to 44
52. " 29	Paul's Arrival at Rome.....	Acts xxvii,	11 to 16

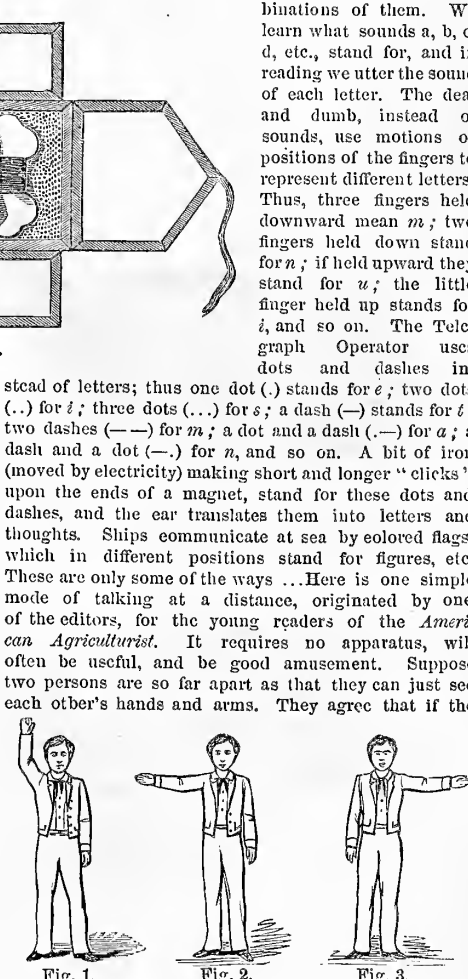
The above Lessons embrace, in order of occurrence, some leading events, parables, etc., from the birth of Christ to the end of the Acts of the Apostles—about 61 years—and give a connected view of the history of that period. The lessons are in order of time, and the first 32 are severally selected from that one of the four Gospels which gives the best account within the compass of about 7 verses.

Tall Structures—Washington's Monument.—The highest human structures now extant are, we believe, as follows:—1. Pyramid of Cheops, in Egypt (480 feet); 2. Strasburg Cathedral (474 feet); 3. St. Peter's, Rome, (458 feet); 4. St. Stephen's Cathedral, Vienna, (445 feet); 5. Salisbury Cathedral, England, (406 feet); 6. Antwerp Cathedral, Brussels, (405 feet); 7. St. Paul's Cathedral, London, (404 feet); 8. Milan Cathedral, Italy, (400 feet); 9. United States Capitol, Washington, (307½ feet). The Cologne Cathedral was planned to be 511 feet, but after over 400 year's work upon it, it is far from completion. The Washington Monument Obelisk was at first started for a height of 600 feet. It is now taken in charge, by the Government,

and is to be 485 feet high, making it the loftiest artificial structure in the world. Some are in favor of adding 30 feet more, so that should the Cologne Cathedral ever be finished, we should still have the highest structure. Five hundred feet is less than one-tenth of a mile (5,280 feet), and is but a small height compared with the mountains of one to five miles elevation.

Talking at a Distance.

There are many ways of expressing our thoughts to others. Talking is the most common, though it takes the child years to learn what modulations or changes of the human voice represent different thoughts. We note down these sounds by letters of the alphabet and combinations of them. We learn what sounds a, b, c, d, etc., stand for, and in reading we utter the sound of each letter. The deaf and dumb, instead of sounds, use motions or positions of the fingers to represent different letters. Thus, three fingers held downward mean *m*; two fingers held down stand for *n*; if held upward they stand for *u*; the little finger held up stands for *i*, and so on. The Telegraph Operator uses dots and dashes instead of letters; thus one dot (.) stands for *e*; two dots (..) for *i*; three dots (...) for *s*; a dash (—) stands for *t*; two dashes (--) for *m*; a dot and a dash (.-) for *a*; a dash and a dot (-.) for *n*, and so on. A bit of iron (moved by electricity) making short and longer "clicks" upon the ends of a magnet, stand for these dots and dashes, and the ear translates them into letters and thoughts. Ships communicate at sea by colored flags, which in different positions stand for figures, etc. These are only some of the ways... Here is one simple mode of talking at a distance, originated by one of the editors, for the young readers of the *American Agriculturist*. It requires no apparatus, will often be useful, and be good amusement. Suppose two persons are so far apart as that they can just see each other's hands and arms. They agree that if the



right hand be held straight up (fig. 1) it stands for **1**. If held straight outward, it stands for **2** (fig. 2). If the left hand be held out straight it stands for **3** (fig. 3). Now let it be understood that each letter of the alphabet has its own number, thus 1 equals *a*; 2 equals *e*; 3 equals *i*, etc. Here is an alphabet with a number for each letter:

A—1	B—21	J—111	Q—131	X—311
E—2	C—22	K—112	R—132	Z—312
I—3	D—23	L—113	S—133	AND—321
O—11	F—31	M—121	T—211	THP—322
U—12	G—32	N—122	V—212	IN—323
Y—13	H—33	P—123	W—213	

Note.—Any other figure or number can be chosen for any letter. The numbers representing the several letters can be changed as often as desired.

Now suppose James wishes to tell George in a distant field to "come to dinner." He holds right hand out twice for 22 or *c*. Dropping both hands, he next throws the right one up twice for 11, or *o*. Next right hand up for 1, right hand out for 2, and right hand up for 1, or 121, equalling *m*. Next his right hand out for 2, or *e*. Next, right hand out, and right hand up twice, for 211, making *t*; then right hand up twice for 11 or *o*. Next, right hand out, left out, for 23 or *d*; then left hand out for 3 or *i*; then right hand up and out twice for 122 or *n*; then right hand out for 2 or *e*; then right hand up, left out, right out, for 132 or *r*—drop the hands between each letter, and pause a little between the words. All this can be done and understood quicker than you can read this description. Each can have the alphabet and numbers written down. The letters most used will soon be remembered. Two can talk silently in a room by simply using a finger or a pencil held up, right, and left.—Two parties may talk miles apart, if in sight of each other, by using a handkerchief or flag on a stick instead of the hand. Army officers talk to each other from hill-tops ten miles or more apart, by using flags several feet square, and portable telescopes to see the movements of the flags clearly.

International Sunday School Lessons.

A few weeks ago Rev. Dr. Vincent stated in London, that 7,500,000 Teachers and Pupils in the United States and Canada alone, were every Sabbath Day studying the same portions of Holy Scripture. Millions more in other lands use the same lessons. It will doubtless interest the friends of this Journal to know that the present popular plan of using International Lessons originated and received its largest impulse through the *American Agriculturist*. Thirty years ago (1848) Mr. Orange Judd prepared a regular series of lessons for each quarter, and posted them conspicuously in the S. S. room. Following up the plan from year to year, with the assist-

Tim's Kit.

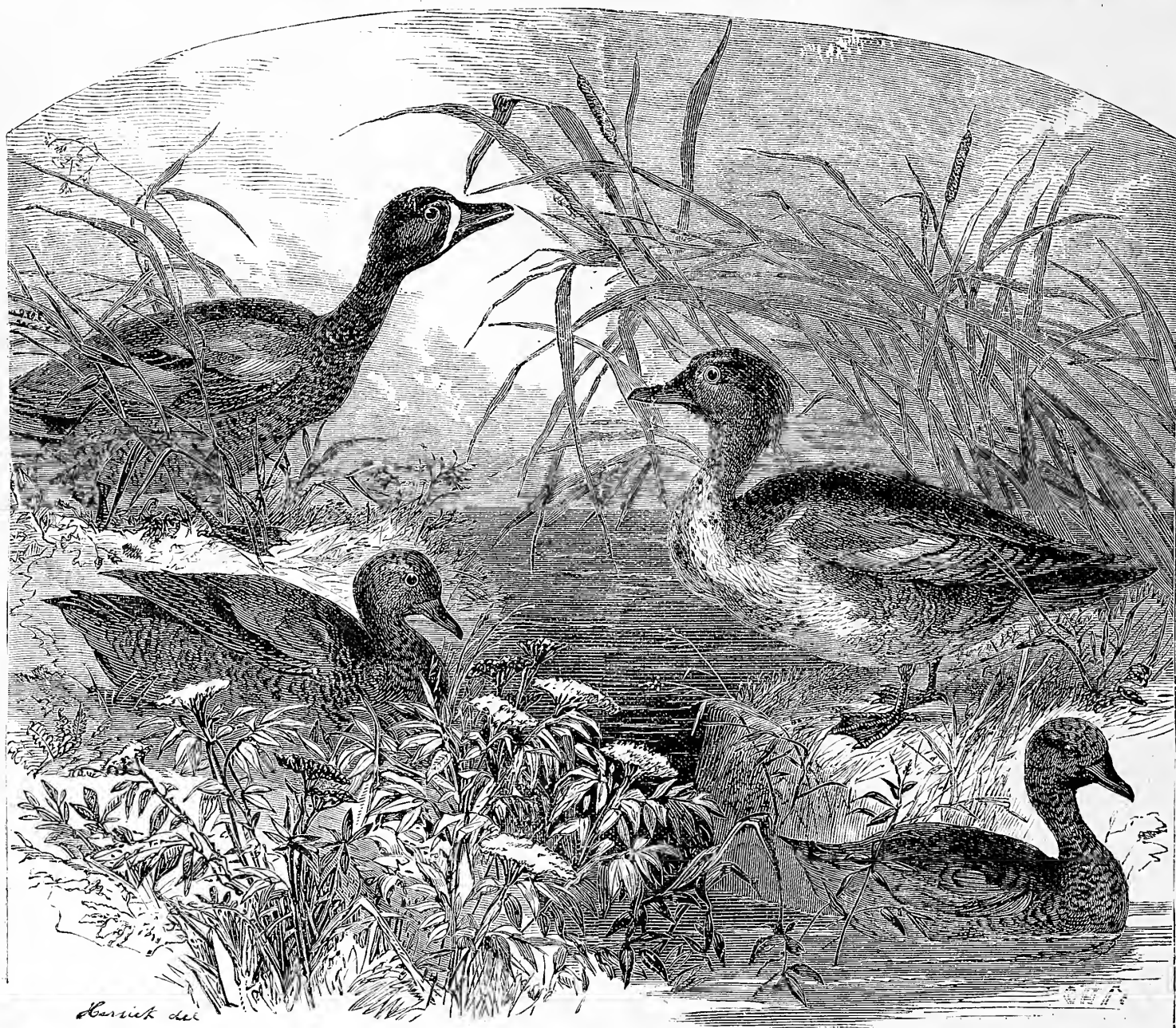
A big heart often lies under a rough exterior. Our older readers will remember the incident that occurred before the door of the *American Agriculturist* office, when a ragged boot-black offered a bite from his peach to a poor comrade, and seeing him take a small bite, exclaimed, "Bite bigger Billy."—The Detroit "Free Press" relates an incident that goes right to every heart. "Limping Tim" came among the "shiners" and news-

but big-hearted urchins. Did God ever make a heart which would not respond if the right chord was touched.

Our Native Water-Fowl.

Some months ago, we gave you a picture of some interesting land birds, and we now give an engraving of two of our most beautiful water-fowls, selecting those that are known in all parts of the country. While birds of different kinds have many things in common—such as

some others, dive for their food, but live upon what they can find upon the margins of the waters they visit. These Teals are among the most common of our water-fowls, and though generally called "ducks," they differ from the true ducks, not only in structure, but in habits. The most conspicuous bird in the picture, the one at the left, and reaching forward, is the male of the Blue-winged Teal, and is readily known by the white mark like a crescent in front of the eye, as well as by the blue feathers upon its wings. The female, shown just below, has the



"RIVER DUCKS."—BLUE-WINGED AND GREEN-WINGED TEALS.

boys around the P. O. and quietly said: "Boys, I want to sell my kit. Here's two brushes, a hull box of blacking, a good stout box, all for two shillin's."—"Goin' away, Tim?" asked a comrade.—"Not 'zactly, boys, but I want a quarter the awfulest kind just now."—"Goin' on a 'scurion?" asked another.—"Not to-day, but I must have a quarter," he answered.—"One of the lads passed over the change and took the kit, and Tim walked straight to the counting-room of a daily paper, put down the money, and said: "I guess I can write if you'll give me a pencil." With slow-moving fingers he wrote a death notice. It went into the paper almost as he wrote it, but you might not have seen it. He wrote:

"Died—Lital Ted—of scarlet fever; aised three yerres. Funeral to-morrer, gon up to Hevin; left won brother."

"Was it your brother?" asked the cashier.—Tim tried to brace up, but he couldn't. The big tears came up, his chin quivered, and he pointed to the notice on the counter and gasped: "I—I had to sell my kit to do it, b—but he had his arms aroun' my neck when he d—died!"

He hurried away home, but the news went to the boys, and they gathered in a group and talked. Tim had not been home an hour, before a barefooted boy left the kit on the doorstep, and in the box was a bouquet of flowers, purchased by pennies contributed by the crowd of ragged

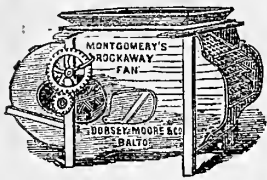
feathers, wings, legs, bills, etc.—all made on one general plan, you will find on examining them that they are wonderfully varied, and that each is adapted to get its living in a peculiar way. When you see the wicked-looking bill, and the strong claws of a Hawk, you know that it means mischief, and that small birds must keep out of their way. If you see the long legs and long neck of the Cranes, you know that these birds must get their living by wading. So every class of birds shows in the form of its parts, the mode of life to which it is fitted. When we come to examine what are generally known as "water-fowls," the geese, the ducks, the teals, and others, we shall find them equally fitted for their particular kind of life. They are usually strong of wing, and can make long flights. When on the water they can swim, their webbed feet being especially suited to this kind of motion; then very often, such birds can dive, and get their food from the plants which grow only at the bottoms of the streams and ponds. The picture shows you two of our most beautiful water birds, the Blue-winged and Green-winged Teals, the last named being found all over the Continent, while the other has not yet been found west of the Rocky Mountains. The ornithologists—as those who study the science of birds are called—class these as "River Ducks," which do not, like

blue wings of the male, but much more of brown in her general coloring. This bird appears in the Middle and New England States in April, on its way to its breeding grounds in the far North—though it sometimes nests in New England; and it again appears in autumn, on its way to the far South, where it passes the winter. The Green-winged Teal is shown on the right of the picture, the male on the bank above, and the female in the water below. It is very common in our fresh waters in both spring and fall, and usually passes for a duck, both with sportsmen, and in the markets. Fauciers in such matters regard the flesh of this bird quite equal to that of the celebrated Canvas-back Duck; it does not confine itself to water plants, but feeds also upon such grains and berries as it finds on land. It is very easily domesticated, and the wild birds have been known to feed with tame fowls in the farmer's barn-yard, and share their corn with them. The plumage of this bird is very beautiful; its head and neck are of a fine chestnut color, with a black chin; its wings are marked with a rich green, and it is especially distinguished by a showy curved white mark, just before the bend of the wing. Besides the Teals, here represented, the English Teal is sometimes found on our Atlantic Coast, and the one called the Cinnamon Teal is found in the far Western and Southern States.

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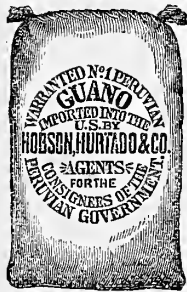
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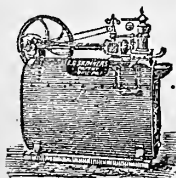
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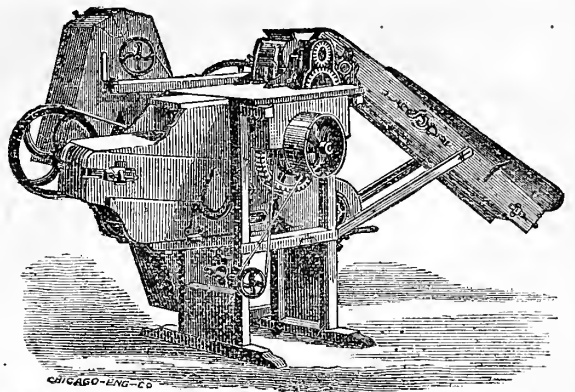
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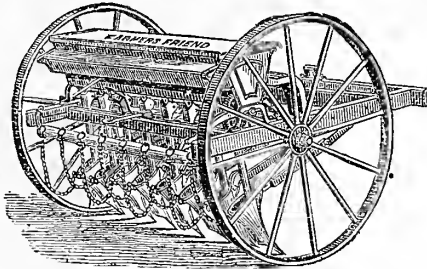
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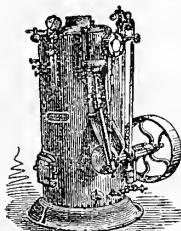
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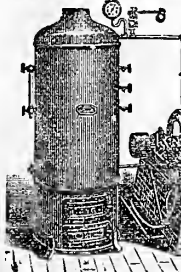
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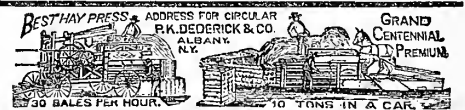
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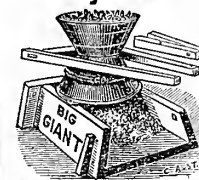
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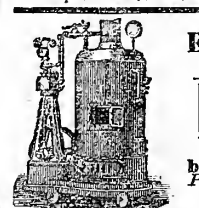
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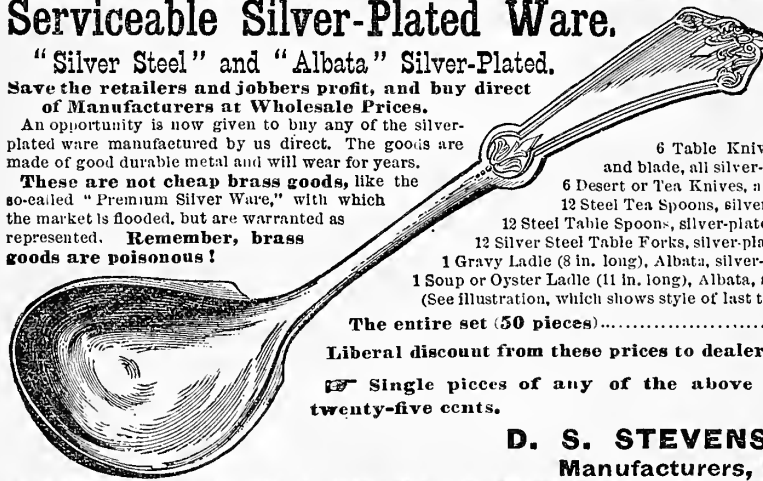
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12 Silver Steel Table Forks, silver-plated, ornamented.....	\$2.00
1 Gravy Ladle (8 in. long), Albata, silver-plated.....	.75
1 Soup or Oyster Ladle (11 in. long), Albata, silver-plated.....	\$1.25
(See illustration, which shows style of last two mentioned articles.)	
The entire set (50 pieces).....	\$11.00

Liberal discount from these prices to dealers and agents.

Single pieces of any of the above sent post-paid for twenty-five cents.

D. S. STEVENS & CO.,
Manufacturers, Northford, Conn.

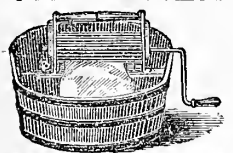
REGALIN PRESERVING POWDER,

For Fruits, Vegetables, Butter, Eggs, Meat, and other Perishable Articles.

Perfectly tasteless, it preserves them as if fresh, with finest flavor, taste, and color. The only article in its line which received the Medal and Diploma at our Centennial Exposition; was awarded the Medal of Superiority by the American Institute in N. Y., 1877. Price 50 cts. per Box. Sent by mail to any address, postage prepaid. Agents wanted.

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THE WALKER WASHER.



Thousands of Them in Actual Use. They are a Perfect Success. Simple, Durable, and Cheap.

Agents wanted in every town where they are not already being sold. Retail price \$8. Send for circular. Address **ERIE WASHER CO., Erie, Pa.**

VASSAR COLLEGE,

FOR THE HIGHER EDUCATION OF WOMEN.

Fall session opens Sept. 18, 1878. Entrance examinations, Sept. 18, 19, and 20. Catalogues with full particulars may be had of the undersigned. **W. L. DEAN, REGISTRAR VASSAR COLLEGE, Poughkeepsie, N. Y.**

WANTED.—An energetic partner with small capital, on a sheep or general stock farm in the South. Address, **W. W. TOWNSEND, Marshallville, Macon Co., Ga.**

THE "Model Piano."

PRICE \$150 to \$200.

The "Model" is a beautiful little Upright or Cottage piano; it is manufactured from the best materials that can be procured; the workmanship is excellent, and its durability is guaranteed; it is small, light, and occupies but little room; is easily transported, and above all the "Model" is sold at about one-third the price that is usually paid for any other reliable piano. For the above reasons, it is very suitable for people of moderate means, and those living in small houses; but it is especially adapted for beginners, and on account of its low price, commands itself to every parent, because it possesses all the principal features of the finest piano, and has none of the numerous disadvantages of the cheap organ.

For full particulars write for illustrated pamphlet, and state where you saw this notice.

SIMPSON & COMPANY,
PATENTEES AND MANUFACTURERS,

No. 5 East 14th St., N. Y. City.

This book needs no Endorsement.—**DR. PALMER.**

AGENTS WANTED FOR DR. MARCH'S NEW BOOK, DAWN TO

In this new volume the Popular Author of NIGHT SCENES IN THE BIBLE portrays with vivid and thrilling force and eloquence the events of Sacred Truth, and adds fresh testimony to the beauty, pathos and sublimity of the Stories of the Bible. Agents will find this Book with its sparkling thoughts, glowing style, beautiful Engravings, and rich bindings, the best in the market. Terms Liberal. Circulars Free. Address, **J. C. McCURDY & CO., Phila., Pa.**

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100 pages, 6x9, 30 plates, 20 Designs for Model Cottages, Farm and Country Houses, also Farm Barn and Hennaerv, Stable and Carriage House, School House, Bank and Library, Masonic Ass'n Building, Town Hall and 3 Churches, descriptive specifications, hints on building and a large amount of miscellaneous matter, making a very valuable book for every one intending to build, price \$1, post-paid. Address the publishers, **PALLISER, PALLISER & CO., ARCHITECTS, BRIDGEPORT, CONN.**

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OVER HALF A MILLION SOLD. Most complete book of its kind ever published. Gives measurement of all kinds of Lumber, logs, and plank, by Boyles' Rule, cubical contents of square and round timber, stave and heading bolt tables, wages, rent, board, capacity of elevators, cord-wood tables, Interest, etc. Standard Book throughout United States and Canada.

Ask your bookseller for it, or one sent by me for 35 cents, post-paid.

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STEEL PENS,
SOLD BY ALL DEALERS.
No. 91 JOHN ST., NEW YORK.

HENRY HOE, Sole Agent. JOSEPH GILLOTT & SONS.

AGENTS LOOK! Catalogue of 44 Novelties free, or with a Hand-book invaluable to letter writers, ten cents. **T. J. HASTINGS & CO., Worcester, Mass.**

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.
POULTRY, GAME, BUTTER, &c., &c.
Also Agents for Hornby's Steam-cooked Wheat and Oats.

No. 279 Washington-st., N. Y.
(Est'd 1845.) Ref., Irving National Bank, New York City



REAL GOOD SHIRTS FOR 50 CENTS.

From the Work Room to the Wearer.

Two, well made, open back, linen bosom, unlaundered, yoke shirts, ready to wash and wear, mailed, post-paid, for one dollar, Men's or Boys' sizes. Give size of collar worn, and write name and full address plainly. Address,

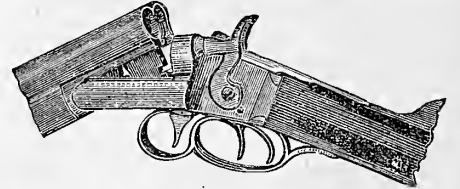
NEWARK SHIRT COMPANY,

104 Montclair Ave., Newark, N. J.

One sample shirt sent for 60 cents in currency, or postage stamps.

STEVENS' PATENT

Breech-Loading Sporting Rifles,



Double and Single Barrel Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hammer's Pet Rifles. Special attention is called to our Double Breech-Loading Guns. They are simple in construction and manufactured with great care from the very best material. They are pronounced by experts "the best gun in the market for the money."

Send for Catalogue. **J. STEVENS & CO., Chicopee Falls, Mass.**

CALCICAKE;

or, Compressed Calcimine.

Something New for Walls and Ceilings. Beautiful and Economical. Ready for Use, and can be Applied by Any One.

AVERILL PAINT,

READY FOR USE.

This Paint is indorsed as the best by thousands who have used it during the past twelve years. Beware of imitations. Send for Sample Cards, furnished free by the

AVERILL CHEMICAL PAINT CO.,

32 Burling Slip, N. Y.; 171 East Randolph St., Chicago; 132 East River St., Cleveland; N. E. Cor. Fourth and Race Sts., Philadelphia; 191 High St., Boston.



Building Felt.

This water-proof material, resembling fine leather, is for outside work (no tar substances used) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

C. J. FAY, Camden, N. J.

PIANO Another battle on high prices ORGAN

See Beatty's latest Newspaper for full reply sent free. Before buying **PIANO or ORGAN**, read my latest circular. Beatty's celebrated Pianos & Organs, beautiful Instruments! Challenge comparison! Rivals are jealous of my success! Most successful house in America! Rosewood Pianos, \$135, 16 stop Church Organs, \$115. Tremendous bargains now ready. Address **WAR** Daniel F. Beatty, Washington, N.J., U.S.A.

LEWISTOWN ACADEMY,

LEWISTOWN, PA., fits thoroughly for College. Course of study and methods of instruction similar to those of best Eastern Schools. Rates much less. Please address for circulars, &c., **W. H. SCHUYLER, A. M., PRINCIPAL.**

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50 Flowered, Diamond, Basket, Roseate, etc. CARDS ONLY Name neatly printed on all. Star Printing Co., Northford, Ct.

25 FANCY CARDS, Snowflake, Oriental, etc., in Twenty-five styles, with name, 10c. **J. B. HUESTED, Nassau, N. Y.**

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WHY GO WEST? Send for Delaware Farm Catalogue and Maps. **J. F. MANCHA, Dover, Del.**

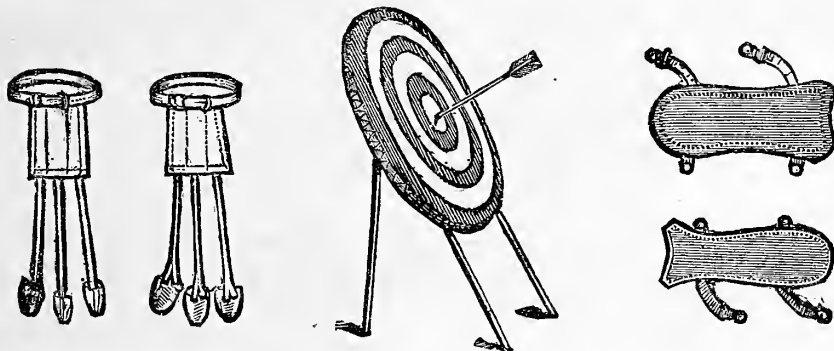


ARCHERY GOODS.

BOWS.

No.	3. Plain Lancewood Bows, 2½ feet.....	each \$0 10
4.	" " " 3 " " " " " " " " " "	15
5.	Stained Lancewood Bows, 3½ feet.....	20
6.	" " " 3½ " " " " " " " " " "	25
7.	" " " 4 " " " " " " " " " "	30
8.	" " " 4½ " " " " " " " " " "	40
9.	" " " 5 " " " " " " " " " "	75
10.	" " " 5½ " " " " " " " " " "	1 25
11.	" " " 6 " " " " " " " " " "	1 50
12.	Horn Tipped, Polished, 3½ " " " " " " " " " "	75

13.	Horn Tipped, Polished, 4 feet.....	each 1 00
14.	" " " 4½ " " " " " " " " " "	1 25
15.	" " " 5 " " " " " " " " " "	1 50
16.	" " " 5½ " " " " " " " " " "	2 00
17.	" " " 6 " " " " " " " " " "	2 25
17½.	Fine Lancewood Bows, Plush Handles, Stained and Polished, Horn Tipped, Fine Strings, 3½ feet, each.....	1 00
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20.	Fine Lancewood Bows, Plush Handles, Stained and Polished, Horn Tipped, Fine Strings, 5 feet, each.....	2 00
21.	Fine Lancewood Bows, Plush Handles, Stained and Polished, Horn Tipped, Fine Strings, 5½ feet, each.....	2 25
22.	Fine Lancewood Bows, Plush Handles, Stained and Polished, Horn Tipped, Fine Strings, 6 feet, each.....	2 50

Extra Quality Self Lancewood Bows.

Made to weight. French Polished, with best Flemish strings whipped, suitable for Club use.

	EACH.
25. 5 feet, made to weight.....	\$3 00
26. 5½ " " " " " " " " " " " "	3 50
27. 5½ " " " " " " " " " " " "	3 75
28. 6 " " " " " " " " " " " "	4 00
29. Ladies' Lemonwood, 5 feet, made to w'ght	4 25
30. " " " 5½ " " " " " " " " " "	4 75
31. " " " 6 " " " " " " " " " "	5 00

Ladies' Best Back Bows.

2 Pieces, with best Flemish Strings.

33. 4½ feet, 20 to 25 pounds.....	\$4 50 to \$6 00
34. 5 " " 22 to 33 " " " " " " " " " "	5 00 to 7 50
35. 5½ " " 25 to 40 " " " " " " " " " "	5 50 to 8 00

Gents' Best Back Bows.

36. 2 Pieces, 6 feet, best Flemish Strings, 40 to 60 lbs., \$7 50, \$9 00, \$10 50 and \$12 00 each.	
--	--

Snakewood and Lancewood Bows.

2 Pieces.

44. 5 feet 3 inches, 20 to 40 lbs.....	each \$ 8 50
45. 6 " " 35 to 60 lbs.....	" 10 00

TARGETS, (Straw, with Canvas Baizes).

EACH.				EACH.			
12 in. diameter.....	\$1 00	24 in. diameter.....	\$3 50				
15 " " " " " " " " " " " " " " " "	1 25	27 " " " " " " " " " " " " " " " "	3 00				
18 " " " " " " " " " " " " " " " "	1 75	30 " " " " " " " " " " " " " " " "	3 50				
21 " " " " " " " " " " " " " " " "	2 00	36 " " " " " " " " " " " " " " " "	4 00				
42 " " " " " " " " " " " " " " " "			5 00				

Target Facings separate, one-quarter price of complete Targets.

PORTABLE IRON TARGET STAND.

4 feet high.....	\$2 00
4½ " " " " " " " " " " " " " " " "	2 50
5 " " " " " " " " " " " " " " " "	3 00
Largest.....	\$4 00 and \$5 00 each.

Orders for the above Archery Goods, amounting to five dollars and upwards, we will forward, free of carriage, to any address in the United States, east of the Missouri River, where there is an express or freight office, and at more distant points for a trifling addition.

ORANGE JUDD COMPANY, 245 BROADWAY, NEW YORK.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 328.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.60 per volume.

Our Fair List, which will be found on page 355, contains some 670 names of State, County, and other fairs to be held mainly this month and next. This is very gratifying evidence of the agricultural prosperity of the country. While many of the Secretaries of Agricultural and other Societies responded to our request for direct information as to the times of holding the fairs, we do not receive so many as we should have had, and have been obliged to take the announcements, as heretofore, from papers published in various States. If the various associations would fix upon the date early in the year, and inform us as soon as this is decided upon, it would greatly facilitate us in making up this list. As to the fairs, we say go to them; do not neglect your local fair for the sake of going to or exhibiting at the State fair, but visit both, and as many more as possible.

Comprehensive Horticulture.—The Premium List of the first annual Exhibition of the Southern California Horticultural Society, to be held at Los Angeles, Oct. 14 to 19, shows that the Society is very liberal in being "open to all the World," and equally so in the range of articles admitted to a horticultural fair. It begins with vehicles, runs through boots and cooking stoves, and includes about everything usually exhibited at fairs, down to the inevitable patch-work quilt. We would not intimate that horticultural products are overlooked, but they find themselves in unusual company. We highly commend one feature in the prizes: nearly all the second prizes are a year's subscription to the "Southern California Horticulturist."

Raising Farmers—Good Help—Scarcie.—Some suggestions on these topics worth thinking of, will be found on page 335.

A Manual of Georgia, for the use of Immigrants and Capitalists, prepared under the direction of Thomas P. James, A. M., M. D., Commissioner of Agriculture. Doct. James, as Commissioner, is not only doing good work to aid those already engaged in agriculture in his State, but has put forth this compendium, which cannot fail to be of service to those who would locate in its mild climate and upon its fertile soils. This work, a generous pamphlet of 119 pages, gives, in a condensed form, a general sketch of the agricultural and other resources of the State, with statistics for each county and the principal towns. Knowing the author, we feel sure that the work is free from all exaggerations, and that its statements may be relied upon. The one fault in the work, is a failure to state how and where it may be procured, though we presume from the Commissioner himself, at Atlanta.

Physicians will be interested in the suggestions on page 334, concerning treatment of Animals, Veterinary Surgeons, and the "Results" referred to.

United States Entomological Commission.—The first Annual Report for 1877, relating to the Rocky Mountain Locust, is issued by the Department of the Interior. It forms one of the series of the Reports of the U. S. Geological Survey, and is uniform in style with those. When we say that three such Entomologists as C. V. Riley, A. S. Packard, Jr., and Cyrus Thomas, have put the results of their work into over 700 closely printed pages, which are abundantly illustrated by maps and engravings—some of the latter of great beauty—it will be admitted that the Locust has had justice done it. The work is highly creditable to the gentlemen of the Commission, and to the Government that authorized it, and we trust it will be most useful to the States ravaged by the insect. To this end we hope that it may be made accessible at cost price, to all who wish to procure it.

ARROWS.

No.		Per Doz.
1—12	inch, plain blunt points.....	\$ 0 25
14—15	" " " " " " " " " " " "	30
2—16	" " " " " " " " " " " "	40
3—18	" " " " " " " " " " " "	63
4—20	" " " " " " " " " " " "	75
5—21	" " " " " " " " " " " "	1 00
6—24	" " " " " " " " " " " "	1 25
7—21	" " " " " " " " " " " "	1 25
8—24	" " " " " " " " " " " "	1 50
9—28	" " " " " " " " " " " "	2 00
10—21	" " " " " " " " " " " "	1 50
11—24	" " " " " " " " " " " "	1 75
12—23	" " " " " " " " " " " "	2 00
13—25	" " " " " " " " " " " "	2 25
14—28	" " " " " " " " " " " "	2 50
15—25	" " " " " " " " " " " "	3 00
16—28	" " " " " " " " " " " "	3 50
17—25	" " " " " " " " " " " "	4 00
18—28	" " " " " " " " " " " "	4 50
19—22	" " " " " " " " " " " "	5 50
20—25	" " " " " " " " " " " "	6 00
21—28	" " " " " " " " " " " "	6 75
22—25	" " " " " " " " " " " "	
	Best footed, with parallel points, painted and gilt, and painted between the feathers.....	8 50
23—28	" " " " " " " " " " " "	9 00
24—25	" " " " " " " " " " " "	10 00
25—28	" " " " " " " " " " " "	11 00

QUIVER BELTS.

Ladies.—No. 1, \$1.75; No. 2, \$2.00; No. 3, \$2.50 each.
Gents.—No. 1, \$2.25; No. 2, \$3.00; No. 3, \$4.50 each.

FINGER TIPS.

Ladies.—No. 1, 63c.; No. 2, \$1.00 each.
Gents.—No. 1, 75c.; No. 2, \$1.00 each.

ARM GUARDS.

LADIES.

No. 1, Green.....	\$1 25 each.
" 2, " " " " " " " " " " " "	1 50 "
" 3, Silk lined, Stitched.....	1 75 "

GENTS.

No. 1, Green.....	\$1 00 each.
" 2, " " " " " " " " " " " "	1 25 "
" 3, Silk lined, Stitched.....	1 50 "

Bow Strings, Best Flemish, 25c., 30c., and 40c. each.

RULES FOR ARCHERY and LAWN TENNIS, 10c. per copy.

A Watch for the People.

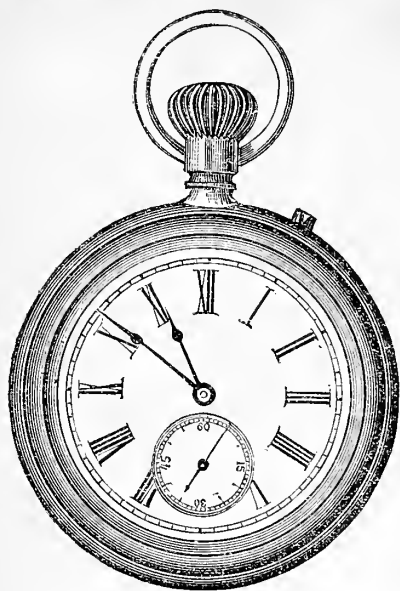


Fig. 1.—FRONT VIEW, FULL SIZE.

A Most Excellent Watch, easily obtained for a Very Little Work; or for a Very Little Money.

Those who wish to obtain a really good, serviceable, reliable, and quite accurate Time-keeper, but who do not feel able to pay for one, or to pay but a small price for one, will be interested in the following:

Last spring, one of the Chief Editors of the *American Agriculturist*, having occasion to leave his Watch for cleaning, received a low-priced watch to carry in the meantime. He thought it would answer temporarily, if watched and corrected daily. To his great surprise, it ran very accurately week after week, varying from standard time less than a minute per week. The Agent of the manufacturers was hunted up, and during the summer different editors have obtained for themselves and friends a number of other watches of the same make, taking them direct from the general stock (not fixed up or selected ones), and carried them for weeks and months. **These watches have ALL given the highest satisfaction.** For example, one now carried by Mr. Judd has been compared daily with Benedict's Standard Clock for a month past, and it has scarcely varied a single second per day! This seems hardly credible, and, as a rule, can not be expected from any watch except one costing a hundred dollars or more, and thoroughly "adjusted to temperature and position." But this much is certain, the watches are such good time-keepers, that we can confidently recommend them to our friends wanting a watch of this kind.

Another important feature is, that these watches are *Stem-winders* and *Stem-setters*. No key is required for winding or moving the hands. (On depressing the little pivot near the ring, the stem moves the hands back or forward). So, after regulating, one has never to open the watch at all. Nine-tenths of all trouble with ordinary, good watches, comes from the admission of dust and moisture in opening, and especially from the fine dust that gets in from the key through the key-hole, and finds its way among the delicate works. All this is obviated in the stem-winding, stem-setting watches, and the necessity of biennial or annual, if not semi-annual, cleaning generally required is greatly lessened.

DESCRIPTION.—Fig. 1 is a front view of full size, and fig. 2, a back view with the cover lifted to show the interior works. These works are covered with glass, so that when thus opened, no dust can enter. The case is strong, looks well, is heavily plated with nickel, which is not easily distinguished from silver, yet is harder, and is not tarnished, like silver, by gasses or sulphur vapors from the skin. For looks and wear, for use in fact, these cases are preferable to coin silver. The case is strong and substantial, the face is protected by a strong, flat crystal with modern beveled edges, and the dial is neat and clear. That the works, the most important part, are well and carefully made, is proved by what they do, as stated above. The weight of the watch is $4\frac{1}{4}$ ounces.

How to Get this Watch Free.

The watches described above are sold so low, that the manufacturers cannot make sufficient wholesale discount to admit of their being offered as general Premiums, like other new articles. **BUT**, as a **SPECIAL OFFER**, for the great Fair Month (September), and **only for this Month**, the Publishers offer 300 of these Watches, as follows:

One Watch will be presented to each subscriber who shall, during the month of September, secure and forward 16 Subscribers to the American Agriculturist for one year, at the NEW subscription rate of \$1.50 a year, post-free. (For our new terms see the first page);

OR, 13 subscribers for $\frac{1}{2}$ years (October 1878 to December 1879, inclusive), at \$1.80 each, post-free;

OR, 31 Subscribers for one year, at the four-club rate of \$1.25 a year, post-free;

OR, 25 Subscribers for $\frac{1}{2}$ years (Oct. 1878 to Dec. 1879, inclusive), at \$1.55 each, post-free.



Fig. 2.—View of Works through the Glass Protector.

(Note 1.)—At least half of the above subscribers must be new ones, or those not now on our books.

(Note 2.)—Two Subscribers for 6 months, or four Subscribers for 3 months will count the same as one subscriber for a year, for the above premium.

(Note 3.)—To DISTANT SUBSCRIBERS—Though the above offer is limited to September, yet, to put all on a par, those subscribers living anywhere so distant as not to receive this notice before Sept. 10, will be allowed 20 days after this paper does arrive, in which to gather and forward names for this premium.

(Note 4.)—The subscribers need not necessarily all be at the same Post Office, but they must all be sent by the person who is to receive the Watch.

☞ This is the most liberal Premium we have ever

offered, or expect to offer. N.B.—It is special, and **only** for September, 1878, with the 20 days after the arrival of the paper to distant subscribers, above specified.

Capital Work for the Fairs.

Those wishing the above premium, will do well to take a copy of the *American Agriculturist* along to the Fairs, where they can gather many names—perhaps enough at a single Fair to secure the watch.

This Watch Supplied to Subscribers for \$10.

If any subscriber of the *American Agriculturist* may wish to purchase one of the above valuable watches, without getting it as a premium, or in addition to a premium one, the Publishers will procure and forward one on receipt of \$10. They are sold at from \$10 to \$20, according to locality, and are worth more for real service and reliability, than many watches sold at several times this price.

Mode and Cost of Delivery.—The above watches will be packed in a safe wooden box and forwarded by express—the delivery to be paid by the receiver. The expressage will probably amount to from 25 to 50 cents, according to distance, to points east of the Mississippi River, and a trifle more to more distant points.

The Hessian Fly and the Wheat Midge.

—These two pests stand on either hand of the farmer. If he sows early, the fly destroys; if he sows late, the midge infests the crop. Of the two evils the fly is the worse, and deserves the most consideration. This insect lays its eggs in August and early September upon the leaves of the young wheat. When hatched, the larva, a small white maggot, works down to the stalk near the root, where it sucks the juices, causing the leaves to become yellow, if not the death of the plant. A variety that starts freely and grows vigorously will therefore resist the fly better than another of less strong growth. And the more fertile the soil, the better the plant sustains the injury. The remedies are obvious. With the help of some active fertilizer and a vigorous variety of wheat, a late planted crop may be as far ahead when the winter comes, as the early crop not so favorably started. To sow on and after Sept. 15th seems to practically secure safety from this enemy.

Rain—How Much on an Acre.—A fall of rain one inch deep on an acre (43,560 square feet), is equal to 3,630 cubic feet; or 27,154 gallons; or 862 barrels. As water weighs 62 $\frac{1}{2}$ lbs. to the cubic foot, the one inch of rain on an acre (3,630 cubic feet), equals 226,875 lbs., or over 113 tons; and on a single square mile, 145,200,000 lbs., or 72,600 tons. As we write (Aug. 7), a telegram says 2 inches of rain, twice the above amount, fell in Providence, R. I., yesterday, in half an hour! The annual fall of rain over the United States, east of 100° longitude, varies from 32 to 56 inches. A mean fall of 44 inches would give 37,938 barrels, or about 5,000 tons of rain-water to every acre. It is much more in many places.

Twenty-Five Cent Dinners for Families of Six, by Juliet Corson, Supt. of N. Y. Cooking School, No. 35 East 17th St., N. Y., price 15 cts. Several months ago, we noticed "Fifteen Cent Dinners," by the same author, and the present work is written with the same laudable purpose—i. e., to show working-people and others how it is "possible to live upon a very moderate income." Bills of fare are given for each meal for every day in the week, the cost of each article being stated. Of course, to bring the prices within her limits, her directions for buying must be heeded, and the meals so arranged, that what is prepared for one, may sometimes serve in part for another. Even those who are not obliged to closely count their expenses, will find here hints for useful economy and methods of cooking, worthy of being tested. We are glad to see that the author gives due prominence to macaroni, a most nutritious article of food that may be cooked in various acceptable styles, and one which should be oftener found on the tables of the well-to-do, as well as of those who must study close economy.

Disease in Sheep.—In an item last month, by inadvertently dropping a word, we were made to say that "a soft loose swelling under the jaw," is known as "liver rot." It should have read, "it accompanies pleurisy, pneumonia, and the disease known as liver-rot," meaning of course that it is one of the attendant symptoms of "liver-rot," and not the disease itself.

State, County, and Other Fairs in 1873.

State and Industrial Fairs.

Am. Institute.....	New York.....	Sept. 11-Nov. 23
Ag'l and Mech'l		
Exposition of		
the Northwest.....	Dubuque, Iowa.....	Sept. 9-12
California.....	Sacramento.....	Sept. 16-21
Cal., Southern.....	Los Angeles.....	Oct. 14-19
Colorado.....	Denver.....	Sept. 21-23
Connecticut.....	Hartford.....	Sept. 10-13
Dakota.....	Sioux Falls.....	Sept. 10-13
Delaware.....	Dover.....	Sept. 23-25
Georgia.....	Macon.....	Oct. 23-Nov. 2
Illinois.....	Freeport.....	Sept. 16-21
Indiana.....	Indianapolis.....	Sept. 30-Oct. 5
Inter State.....	Chicago.....	Sept. 4, Oct. 19
Iowa.....	Cedar Rapids.....	Sept. 16-20
Kansas City Ex.	Kansas City, Mo.....	Sept. 16-20
Kentucky Ag'l		
Mech'l.....	Lexington.....	Aug. 27-31
Maine.....	Portland.....	Sept. 17-20
Maryland.....	Pimlico.....	Sept. 21-27
Maryland Inst'c.	Baltimore.....	Oct. 2, Nov. 2
Mass. Char.		
Mechanics.....	Boston.....	Sept. 2, Nov. 2
Mechanics Inst'c.	San Francisco.....	Sept. 13-14
Michigan.....	Detroit.....	Sept. 16-23
Minnesota A. & M.	Minneapolis.....	Sept. 2-7
Minnesota State.	St. Paul.....	Sept. 2-7
Missouri.....	Madison.....	Sept. 9-13
Montana.....	Helena.....	Sept. 23-25
Nebraska.....	Lincoln.....	Sept. 23-27
Nevada.....	Reno.....	Oct. 7-12
New England.....	Worcester, Mass.....	Sept. 3-6
New Hampshire.....	Manchester.....	Sept. 16-20
New Jersey.....	Waverly.....	Sept. 16-20
New Jersey Hort. M.	Holly.....	Sept. 9-13
New York.....	Elmira.....	Sept. 9-13
Ohio.....	Columbus.....	Sept. 9-13
Oregon.....	Salem.....	Oct. 10-13
Pennsylvania.....	Eric.....	Sept. 23-27
St. Louis.....	St. Louis, Mo.....	Oct. 7-12
Texas.....	Austin.....	Oct. 9, Nov. 23
Texas.....	Houston.....	Oct. 23-25
Tri-State Fair.....	Dayton, O.....	Sept. 16-21
Vermont.....	St. Albans.....	Sept. 10-12
Virginia.....	Richmond.....	Oct. 23, Nov. 1
Wisconsin.....	Madison.....	Sept. 9-13

DISTRICT FAIRS.

Georgia North.....	Atlanta.....	Oct. 21
Ohio Central.....	Mechanicsburg.....	Sept. 3-6
Ohio Northern.....	Cleveland.....	Sept. 9-13
Kentucky North.....	Florence.....	Aug. 27
Ohio Southern.....	Dayton.....	Sept. 23-27
Indiana Northern Ft.	Wayne.....	Sept. 9-11
Iowa Northern.....	Pottsville.....	Sept. 3-5
Tri-State, O. Mich		
Indiana.....	Toledo.....	Sept. 16-21
Wisconsin Cent'l.	Watertown.....	Sept. 16-20
Wisconsin N. W.	Oshkosh.....	Sept. 23-27
Wisconsin S. E.	Madison.....	Sept. 2-5
Wisconsin S. W.	Mineral Point.....	Sept. 3-9

County and Town Fairs.

Androscoggin.....	Leviston.....	Oct. 1-3
Franklin.....	Farmington.....	Oct. 8-10
Knox.....	Camden.....	Oct. 1-3
Montville.....	Montville.....	Oct. 2
Piscataquis East.....	Brownville.....	Sept. 23-24
Scarboro.....	Prospect Hill.....	Sept. 24-25
Waldo & Penobscot	Monroe.....	Oct. 1-2
NEW HAMPSHIRE.		
Cheshire.....	Keene.....	Sept. 25-26
Sullivan.....	Claremont.....	Sept. 25-26
VERMONT.		
Caledonian.....	St. Johnsbury.....	Sept. 17-19
Franklin.....	Sheldon.....	Sept. 4-6
MASSACHUSETTS.		
Barnstable.....	Barnstable.....	Sept. 17-18
Berkshire.....	Pittsfield.....	Oct. 1-3
Bristol.....	Taunton.....	Sept. 24-26
Bristol Center.....	Myrick's.....	Sept. 11-13
Deerfield Valley.....	Charlemont.....	Sept. 19-20
Essex.....	Lawrence.....	Sept. 24-25
Franklin.....	Greenfield.....	Sept. 26-27
Hampden.....	Springfield.....	Sept. 24-25
Hampden, East.....	Pinner.....	Sept. 17-18
Hampshire.....	Amherst.....	Sept. 17-18
Hampshire, etc.	Northampton.....	Sept. 19-21
Hanson.....	Hanson.....	Sept. 25-26
Highland.....	Middlefield.....	Sept. 12-13
Hingham.....	Hingham.....	Sept. 24-25
Housatonic.....	North Adams.....	Sept. 17-18
Housatonic.....	G't Barrington.....	Sept. 25-27
Marshall.....	Marshall.....	Sept. 11-12
Martha's Vineyard	West Tisbury.....	Oct. 1-2
Middlesex.....	Concord.....	Sept. 25-27
Middlesex, North	Lowell.....	Sept. 24-25
Middlesex, South	Framingham.....	Sept. 17-18
Nantucket.....	Nantucket.....	Oct. 4-5
Natick.....	Natick.....	Oct. 2-3
Norfolk.....	Readville.....	Sept. 26-27
Plymouth.....	Bridgewater.....	Sept. 18-20
Union.....	Randolph.....	Sept. 19-20
Wilmington Far. Club	Wilmington.....	Sept. 2
Worcester.....	Worcester.....	Sept. 19-20
Worcester, North	Fitchburg.....	Sept. 26
Worcester, N. W.	Athol.....	Oct. 1-2
Worcester, South	Sturbridge.....	Sept. 12-13
Worcester, S. E.	Millisford.....	Sept. 24-26
Worcester, West	Barre.....	Sept. 26-27
RHODE ISLAND.		
Washington.....	West Kingston.....	Sept. 10-12
CONNECTICUT.		
Danbury Town.....	Danbury.....	Oct. 1-5
Fairfield.....	Norwalk.....	Sept. 10-12
Gulford.....	Gulford.....	Sept. 24
Housatonic.....	New Milford.....	Sept. 21-26
Meriden.....	Meriden.....	Sept. 19-20
Milford & Orange	Milford.....	Sept. 11-12
New Haven.....	New Haven.....	Sept. 25-27
New London.....	Norwich.....	Sept. 17-19
Ridgefield.....	Ridgefield.....	Sept. 17-19
Union.....	Falls Village.....	Sept. 10-11
Watertown.....	Watertown.....	Sept. 24-26
Windham.....	Brooklyn.....	Sept. 24-26
NEW YORK.		
Annsville and Lee	Taberg.....	Sept. 10-12
Brookfield.....	Clarkville.....	Sept. 24-25
Broome.....	Whitney's Point.....	Sept. 3-6
Chautauqua.....	Jamestown.....	Sept. 11-13
Danby.....	Danby, (Tom's).....	Sept. 18
Delaware.....	Delhi.....	Sept. 10-12
Dutchess.....	Washington Hols.....	Sept. 17-19
Edmond's & Bur	Hamburgh.....	Sept. 10-13
Essex.....	Westport.....	Sept. 17-19

Franklin.....	Malone.....	Sept. 2-27
Fulton.....	Johnstown.....	Sept. 17-19
Galen.....	Clyde.....	Sept. 20-21
Genesee.....	Batavia.....	Sept. 6-7
Gouverneur.....	St. Lawrence Co.....	Sept. 4-6
Greene.....	Cairo.....	Sept. 18-19
Hamilton.....	Bridgehampton.....	Oct. 1-3
Iroquois.....	Cattaraugus Res.....	Sept. 17-20
Jefferson.....	Watertown.....	Sept. 24-26
Lenox.....	Oneida.....	Sept. 24-27
Lewis.....	Lowville.....	Sept. 10-13
Maine Village.....	Maine, (Broome).....	Aug. 28-30
Oneida.....	Rome.....	Sept. 16-20
Oneonta Union.....	Oneonta.....	Sept. 26-28
Onondaga.....	Syracuse.....	Sept. 17-19
Onondaga Indian.....	Onondaga Castles.....	Sept. 25-28
Onondaga N'west	Baldwinsville.....	Sept. 24-27
Orleans.....	Albion.....	Sept. 2-23
Oswego Falls.....	Fulton Station.....	Sept. 17-19
Oswego.....	Melco.....	Sept. 10-12
Otsego.....	Cooperstown.....	Sept. 23-25
Phoenix Union.....	Phoenix.....	Sept. 19-21
Racket & St. Regis	Valley, Potsdam.....	Sept. 17-19
St. Lawrence.....	Cantow.....	Sept. 17-19
Sandy Creek, Rich-		
land, Orwell.....	Sandy Creek.....	Sept. 4-6
Sangerfield & Mar	Waterville.....	Sept. 23-25
Schenectady.....	Schenectady.....	Sept. 10-13
Schenectady Valley	Schenectady.....	Sept. 19-21
Schoharie.....	Waterville.....	Sept. 24-26
Skaneateles Farmers	Club.....	Sept. 17-18
Steuben.....	Bath.....	Sept. 25-27
Sullivan.....	Monticello.....	Oct. 2-3
Susquehanna Val	Unadilla.....	Sept. 17-19
Tompkins.....	Ithaca.....	Oct. 1-3
Waddington.....	Waddington.....	Sept. 3-5
Warrensburg Un	Warrensburg.....	Sept. 17-20
Western N. York	Rochester.....	Sept. 8-6
Winfield.....	West Winfield.....	Sept. 16-18
Wyoming.....	Warsaw.....	Sept. 24-26
Yates.....	Penn Yan.....	Sept. 24-26

NEW JERSEY.

Burlington.....	Mt. Holly.....	Oct. 8-10
PENNSYLVANIA.		
Berks.....	Reading.....	Oct. 1-4
Braford.....	East Towanda.....	Sept. 25-27
Bucks.....	Kutztown.....	Sept. 17-20
Charlottesville.....	Cannonsburg.....	Sept. 24-27
Chester.....	West Chester.....	Sept. 19-21
Columbia.....	Bloomsburg.....	Oct. 9-12
Connoquessing		
Valley.....	Harmony.....	Sept. 10-12
Cumberland.....	Carlisle.....	Oct. 1-4
Doylstown.....	Doylstown.....	Oct. 1-4
Farm. & Mech. In	Easton.....	Oct. 1-4
Franklin.....	Chambersburg.....	Oct. 8-11
Franklin Creek.....	Schraftstown.....	Sept. 17-19
Gratz.....	Gratz.....	Sept. 24-27
Indiana.....	Indiana.....	Oct. 1-4
Lehigh.....	Allentown.....	Sept. 21-27
Lycoming.....	Williamsport.....	Sept. 17-20
Lycoming & Clin	Jersey Shore.....	Sept. 25-28
Mercer.....	Stoneboro.....	Sept. 9-12
Monongahela Val	Monongahela City.....	Sept. 15-20
Montgomery.....	Acber Park.....	Sept. 23-25
Northampton.....	Nazareth.....	Oct. 1-4
Northumberland	Dewart.....	Oct. 1-3
Oxford.....	Oxford.....	Sept. 25-27
Potter.....	Coudersport.....	Sept. 25-27
Schnylkill.....	Orwigsburg.....	Sept. 23-26
Somerset.....	Somerset.....	Sept. 25-27
Susquehanna.....	Montrose.....	Sept. 25-26
Toga.....	Wellsboro.....	Sept. 25-27
Union.....	Engetstown.....	Oct. 1-3
Warren.....	Sugar Grove.....	Sept. 17-19
Wayne.....	Honesdale.....	Oct. 1-3
Westmoreland.....	Greensburg.....	Sept. 21-27
York.....	York.....	Oct. 1-4

OHIO.

Allen.....	Uma.....	Oct. 1-4
Ashtabula.....	Jefferson.....	Sept. 24-27
Athens.....	Athens.....	Oct. 3-4
Auglaize.....	Wapakoneta.....	Sept. 25-27
Belmont.....	St. Clairsville.....	Sept. 19-20
Brown.....	Georgetown.....	Sept. 10-13
Butler.....	Hamilton 1st We.....	Oct. 1
Carroll.....	Urbana.....	Sept. 23-24
Clark.....	Springfield.....	Aug. 20-23
Claremont.....	Boston.....	Sept. 3-6
Clinch.....	Wilmington.....	Sept. 2-5
Columbiana.....	New Lisbon.....	Sept. 24-26
Coshocton.....	Coshocton.....	Sept. 24-27
Crawford.....	Cuyahoga.....	Sept. 24-27
Cuyahoga.....	Chagrin Falls.....	Oct. 1-4
Delaware.....	Delaware.....	Sept. 17-20
Delaware.....	Delaware.....	Oct. 1-4
Delaware.....	Delaware.....	Sept. 25-27
Elie.....	Sandusky.....	Sept. 24-27
Fairfield.....	Lancaster.....	Oct. 9-12
Fulton.....	Vanhook.....	Sept. 24-27
Gallia.....	Gallipolis.....	Sept. 11-13
Greene.....	Xenia.....	Aug. 14-16
Harold.....	Findlay.....	Oct. 1-3
Harrison.....	Cadiz.....	Sept. 25-28
Hocking.....	Logan.....	Oct. 2-5
Holmes.....	Millersburg.....	Sept. 25-27
Jackson.....	Jackson C. H.....	Sept. 13-15
Jefferson.....	Smithfield.....	Sept. 25-27
Knox.....	Mt. Vernon.....	Sept. 24-27
Lake.....	Painesville.....	Sept. 6
Lawrence.....	Uronton.....	Sept. 17-20
Licking.....	Newark.....	Oct. 1-4
Logan.....	Bellefontaine.....	Oct. 1-3
Lorain.....	Elyria.....	Oct. 1-3
Lucas.....	Toledo.....	Sept. 18-21
Madison.....	Canfield.....	Oct. 1-3
Marion.....	Marion.....	Oct. 1-4
Medina.....	Medina.....	Sept. 17-19
Meigs.....	Pomeroy.....	Sept. 19-20
Miami.....	Findlay.....	Oct. 10-13
Miami.....	Troy.....	Oct. 8-11
Monroe.....	Woodsfield.....	Sept. 17-19
Morgan.....	McConnellsville.....	Sept. 17-19
Morrow.....	Mt. Gilead.....	Oct. 9-11
Muskingum.....	Zanesville.....	Sept. 3-6
Ottawa.....	Port Clinton.....	Sept. 16-18
Paulding.....	Paulding.....	Oct. 1-4
Perry.....	Lexington.....	Sept. 25-27
Pickaway.....	Circleville.....	Oct. 1-4
Preble.....	Eaton.....	Sept. 24-27
Portage.....	Ravenna.....	Sept. 25-27
Putnam.....	Ottawa.....	Oct. 9-12
Richland.....	Mansfield.....	Sept. 5-7
Ross.....	Chillicothe.....	Sept. 3-6
Sandusky.....	Frankmont.....	Oct. 1-4
Shelby.....	Findlay.....	Oct. 1-4
Shelby.....	Sidney.....	Oct. 1-4
Stark.....	Canton.....	Oct. 1-4
Summit.....	Akron.....	Oct. 2-5

Trumbull.....	Warren.....	Sept. 17-20
Tuscarawas.....	Canal Dover.....	Oct. 1-4
Union.....	Marysville.....	Oct. 1-4
Van Wert.....	Van Wert.....	Sept. 17-20
Warren.....	Lebanon.....	Sept. 17-20
Washington.....	Marion.....	Oct. 1-4
Wayne.....	Wooster.....	Oct. 2-4
Wood.....	Tontogany.....	Sept. 3-6

INDIANA.

Allen.....	Fort Wayne.....	Sept. 9-13
Bartholomew.....	Columbus.....	Aug. 27-31
Bradletown Union	Bradletown.....	Aug. 26-31
Boone.....	Lebanon.....	Sept. 9-13
Carroll.....	Delphi.....	Sept. 23-27
Cass.....	Logansport.....	Sept. 24-27
Clark.....	Charlestown.....	Sept. 10-13
Clinton.....	Frankfort.....	Sept. 16-20
Decatur.....	Greensburg.....	Aug. 20-23
Delaware.....	Muncie.....	Sept. 10-13
Dunkirk Union.....	Dunkirk.....	Sept. 3-6
East Enterprise.....	Switzerland Co.....	Sept. 10-13
Edinburgh Union	Edinburgh.....	Sept. 24-28
Elkhart.....	Goshen.....	Oct. 1-4
Fayette.....	Connersville.....	Sept. 3-6
Fillon.....	Rochester.....	Sept. 19-21
Fountain W. & V.	Covington.....	Sept. 24-27
Franklin.....	Brookville.....	Oct. 1-4
Gibson.....	Princeton.....	Sept. 16-20
Graut.....	Marion.....	Sept. 17-20
Greene.....	Linton.....	Oct. 1-5
Hamilton.....	Cicero.....	Aug. 27-30
Harrison.....	Corydon.....	Sept. 10-14
Hendricks.....	Danville.....	Sept. 10-13
Henry.....	New Castle.....	Sept. 17-20
Howard.....	Kokomo.....	Sept. 16-21
Huntington.....	Huntington.....	Sept. 17-20
Jasper.....	Reusslaer.....	Sept. 11-20
Jay.....	Portland.....	Oct. 1-4
Jefferson.....	Madison.....	Sept. 17-20
Knightstown Un	Knightstown.....	Aug. 27-30
Knox.....	Vincennes.....	Oct. 14-19
Kosciusko.....	Warsaw.....	Sept. 25-26
La Grange.....	La Grange.....	Sept. 24-27
Lake.....	Crown Point.....	Sept. 24-27
La Porte.....	La Porte.....	Sept. 25-27
Lawrence.....	Bedford.....	Sept. 10-13
Logansport Dist.	Logansport.....	Oct. 8-12
Madison.....	Anderson.....	Sept. 3-6
Marion.....	Valley Mills.....	Sept. 5-7
Miami.....	Peru.....	Sept. 17-20
Middlefork Dist.	Middlefork.....	Aug. 26-30
Middletown Un	Middletown.....	Aug. 26-30
Mooresville.....	Bloomington.....	Sept. 18-20
Mitchell District	Mitchell.....	Sept. 25-29
Morgan.....	Martinsville.....	Sept. 10-15
Noble.....	Ligonier.....	Sept. 17-20
Northeastern Ind.	Waterloo.....	Oct. 8-11
Perry.....	Rome.....	Oct. 1-4
Porter.....	Valparaiso.....	Sept. 18-20
Posey.....	New Harmony.....	Sept. 10-13
Pulaski.....	Ellettsburg.....	Sept. 2-6
Putnam.....	Greencastle.....	Sept. 23-26
Prairie Farmer.....	Francesville.....	Sept. 10-13
Randolph.....	Winchester.....	Sept. 17-20
Remington Dist.	Remington.....	Aug. 27-30
Ripley.....	Osgood.....	Aug. 27-30
Rush.....	Rushville.....	Sept. 10-13
Russellville Un	Russellville.....	Aug. 19-21
Shelby.....	Shelbyville.....	Sept. 2-7
Starke.....	Knox.....	Sept. 26-28
Steuben.....	Angola.....	Sept. 24-27
Sullivan.....	Sullivan.....	Sept. 3-

MARYLAND.	
Talbot.....	Hambledon Park.....Sept. 11-13
Washington.....	.....Oct. 16-18
West'n Maryland.....	Cumberland.....Oct. 22-25
CALIFORNIA.	
California South'n.....	Los Angeles.....Oct. 14-19
Cal. South'n Hort.....	Los Angeles.....Oct. 14-19
El Dorado.....	Placerville.....Sept. 13-15
Golden Gate.....	Oakland.....Sept. 9-16
Monterey.....	Salinas City.....Oct. 8-12
Napa & Solano.....	Vallejo.....Sept. 3
Northern.....	Marysville.....Sept. 23-28
San Joaquin Val.....	Stockton.....Sept. 24-28
Santa Clara.....	San Jose.....Sept. 30, Oct. 5
Siskiyou.....	Yreka.....Oct. 2-5

Grasses Named.—"C. R. G.," Young Co., Tex.
 "Pungent Meadow Grass (*Eragrostis poaeoides*, var. *megastachya*), with us an annual weed in cultivated grounds and waste places. It has a strong odor, as indicated by its common name. It belongs to a genus of little or no agricultural value, and if your horses show a fondness for it, it is probably due to the fact that it is a change from their ordinary food. We should not like to confine an animal to this as its only fodder...." S. S., "Stonewall, Va. "Velvet Grass" (*Holcus lanatus*), and so unlike Orchard grass, that the seed could hardly have been sold for that by any competent seedsmen. It is of very little value, but is sometimes grown on soils too poor to raise a better grass...." J. S., "Henderson, N. C. Italian Ray Grass (*Lolium Italicum*), a valuable grass on good soils. The seeds may have been introduced in some packing case, or mixed with other seeds."

Pear Blight.—"J. C. W.," Hartford, Conn., and others. We are obliged to reply, as we have many times in the past, that the "cause" of the blight is not known. It is supposed to be due to fungi, but this has not been demonstrated. Its presence is not known or suspected, until the tree, or a part of it, is dead, hence remedies can not be applied. The preventives that have been suggested are numerous, but we do not find any two fruit growers agree as to their efficacy. All that, with our present limited knowledge, can be advised, is, to cut away the blighted portion, be it more or less, and for fear that fungi may be concerned, burn the prunings. Though pear blight is a topic discussed at pomological meetings more frequently than any other, scarcely any positive knowledge has been thus far elicited.

Prickly Comfrey again comes forward as a matter of interest. "A. W.," Essex Co., N. Y., calls it "a humbug of the worst kind," as even his horses will not eat it. While some maintain it is a failure as a fodder crop, others speak favorably of it, and we have no means of knowing what there has been in the treatment of the plant, or in the method of feeding it, to account for these wide differences of opinion. In our own experience, a row 300 feet long, it comes early and holds on late, and if our animals would only eat it, we should esteem it highly, but, in fact, neither of our cows would touch it last year or this; early this spring, our horses seemed fond of it, but refused it altogether after they had had a nip at the pasture. The pigs eat it, but where "pussley" and garden refuse are abundant, we see no inducement to cultivate Comfrey or other crops for feeding pigs. We much regret that we can give no more favorable report from our own experience. It would appear that this Comfrey meets with more favor in the South than in the North and West, as it will there yield fodder before corn can be made available.

The Fly in Wheat.—"B. H.," Hillsboro, N. J. The "fly" is not in the seed wheat. After the young wheat plants have come above the ground, the fly lays its eggs on the leaves near the surface, and these hatch in a few days into small white maggots, which crawl down to the bottom of the stalk, pierce it and suck the juices. Anything that will disturb or destroy the maggot or the fly will save the wheat. See "Hints for Work," page 324.

Lime, Salt, and Ashes, we would say to "J. A. B.," of Great Falls, N. H., will not make a good compost for sandy land. The ashes are all right, and the more used the better. Lime is seldom of any use on light soil, though often valuable for heavy land, and salt only on special crops or soils naturally fertile. If it is thought advisable to use either or all of these, there can be no advantage in mixing them; though the salt and lime may be put together to advantage for use on heavy soils, as the mixture results in beneficial chemical action.

Hoisting Wheel.—"J. G.," East Toledo, Ohio. A plan for constructing a hoisting wheel was given in the *American Agriculturist* for August, 1875.

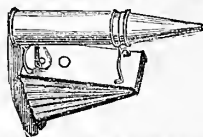
Treatment for Garget.—"H."—We have found a mixture of 7 parts of Glycerine and 1 part of Iodide of Potassium, to be the most effective application for caked or swollen udder. Before rubbing this upon the udder, that organ should be well fomented with warm water for some time. Half an ounce of Saltpetre may be given to the cow daily, while the udder is feverish.

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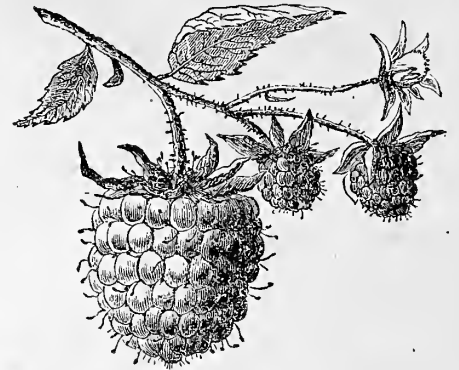
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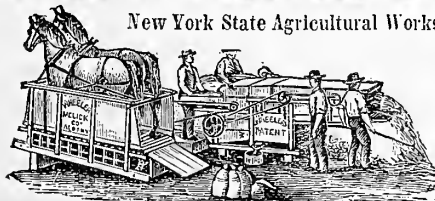
nate anything themselves further than attaching some little side trap to the machine they pirate in order to get a patent on the side trap and make the public believe it is on the machine proper. Said Ertel copied the machine in question bodily, and the patents he claims are not on the machine proper but on little traps attached to a feed door and the pole of the truck, neither of which could be utilized on a perfect press, and he has no authority to use my patented press to apply his side trap. I am not a novice in presses and patents, but have had a life experience and am prepared to satisfy all interested that I am entitled to all I claim, and, having the ability to do so, shall protect my property to the interest of the public and myself. Do not regard this as a scare as I volunteer to furnish evidence to satisfy all upon application that the above is a statement of facts, and in all fairness I ask the public if I am not entitled to some consideration for my improvements and the benefit they have been to the hay interests of the country. Parties having these contraband presses will not be allowed to use them unless they settle with me, and, in addition, apply such of my improvements as are required to make them do good work, and turn out bales that will not sell at a discount, thereby damaging the sale of our patented bale in the market. Don't be swindled, but send to me for copies of my patents before purchasing any horizontal hay press. Price of presses guaranteed the best in the world, and cheaper at prices than any other as a gift or no sale, from \$150 upwards. Send for illustrated price list.

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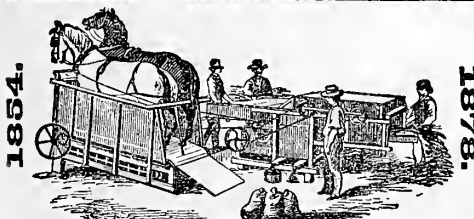
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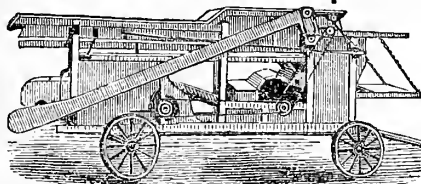
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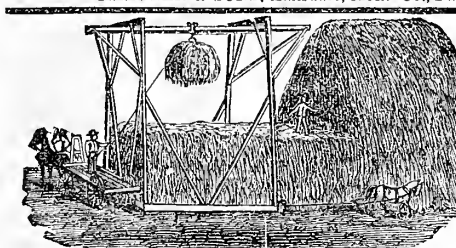
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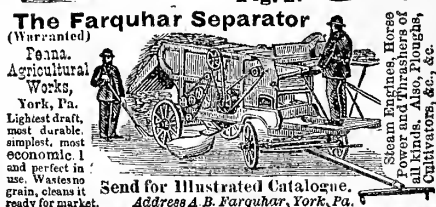
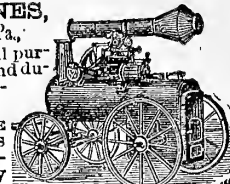
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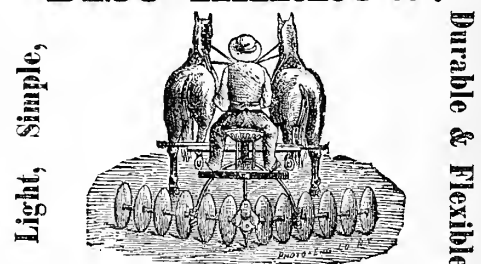


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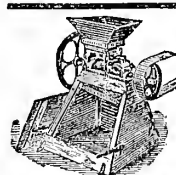


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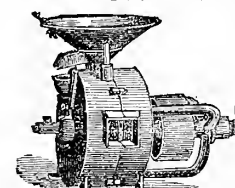


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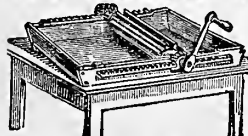


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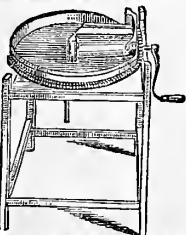
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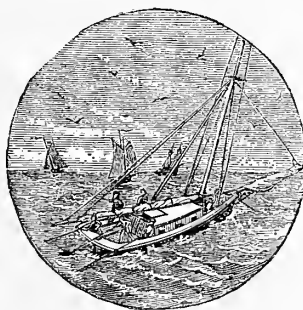
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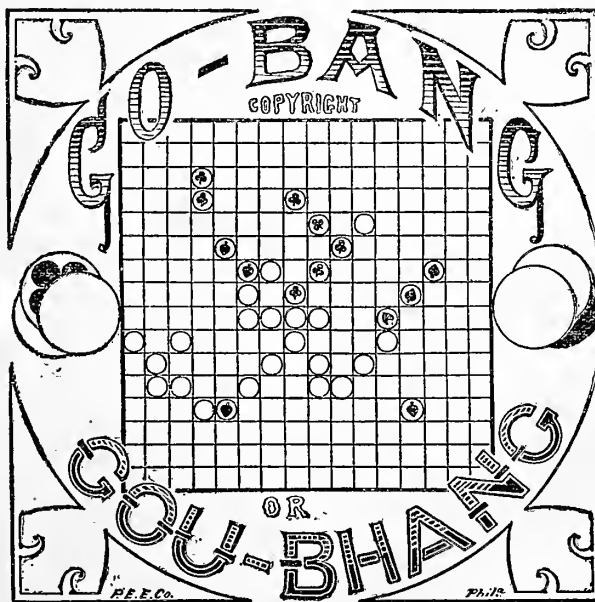
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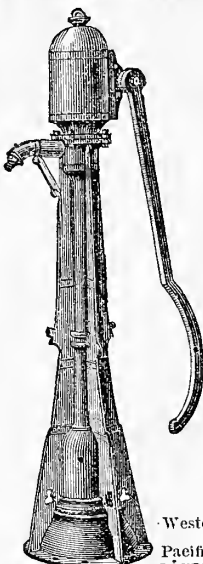


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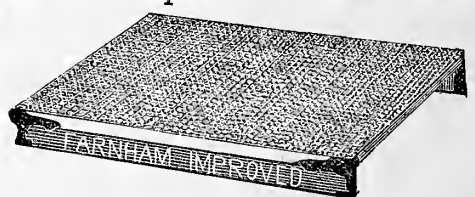
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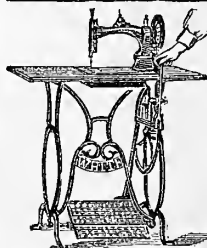
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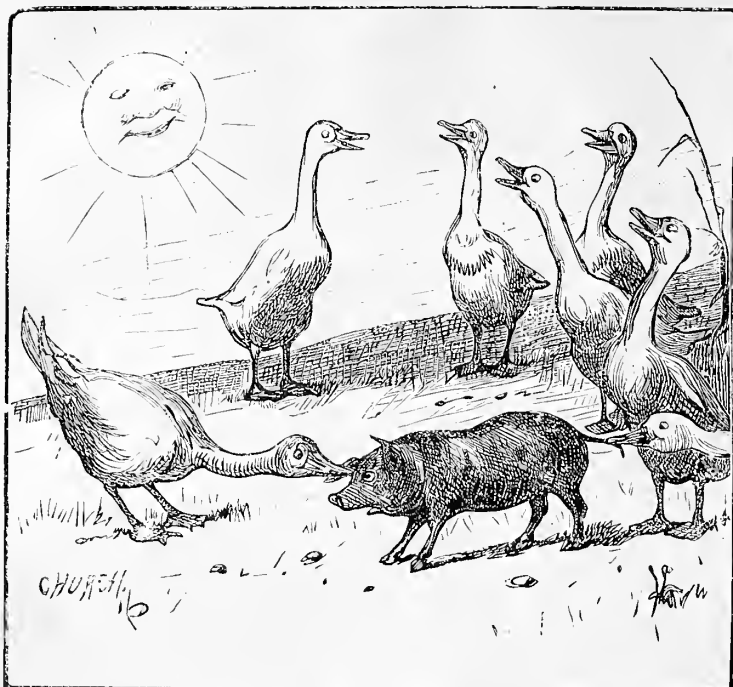
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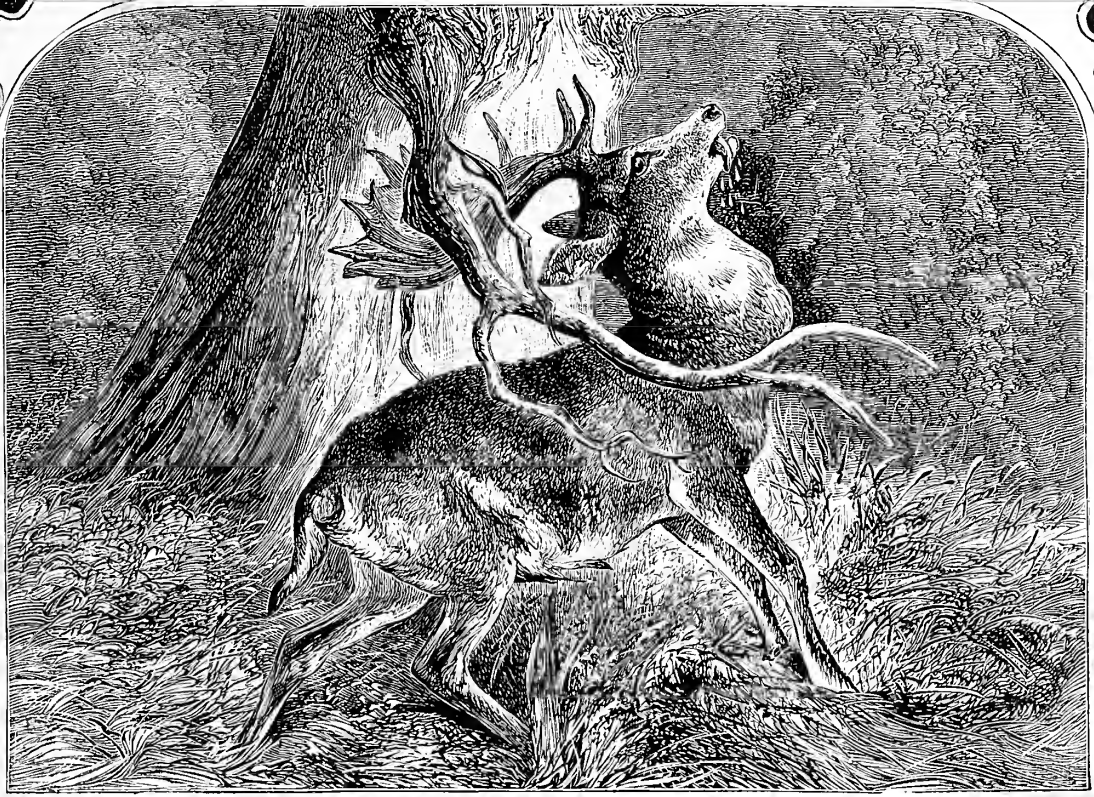
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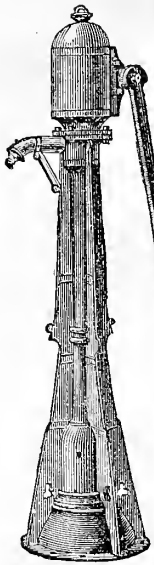


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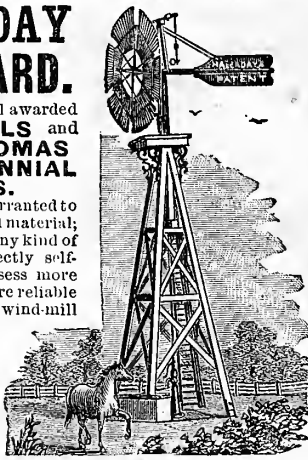
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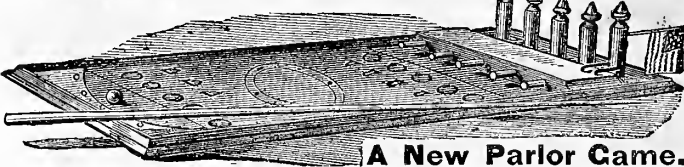
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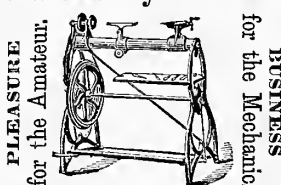
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Calendar for the Month.

Day of Month.	Day of Week.	Boston, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.
1	T	5 57	4 42	8 58	5 57	4 43	9 5	5 56	4 43	9 12
2	W	5 58	5 40	10 1	5 58	5 41	10 8	5 57	5 42	10 15
3	T	6 0	5 39	11 7	5 59	5 39	11 13	5 58	5 40	11 20
4	F	6 1	5 37	morn	6 0	5 38	morn	5 59	5 39	morn
5	S	6 2	5 35	0 14	6 1	5 36	0 19	6 0	5 37	0 24
6	S	6 3	5 33	1 30	6 2	5 34	1 21	6 1	5 35	1 27
7	M	6 4	5 32	2 23	6 3	5 33	2 26	6 2	5 34	2 28
8	T	6 5	5 30	3 25	6 4	5 31	3 26	6 3	5 33	3 28
9	W	6 6	5 28	4 25	6 5	5 30	4 26	6 4	5 31	4 26
10	T	6 7	5 27	5 26	6 6	5 28	5 25	6 5	5 29	5 24
11	F	6 8	5 25	rises	6 7	5 26	rises	6 6	5 28	rises
12	S	6 10	5 24	5 34	6 8	5 25	5 38	6 7	5 26	5 43
13	S	6 11	5 22	6 3	6 9	5 23	6 8	6 8	5 25	6 14
14	M	6 12	5 20	6 33	6 10	5 22	6 45	6 9	5 23	6 51
15	T	6 13	5 19	7 22	6 12	5 20	7 39	6 10	5 22	7 36
16	W	6 14	5 17	8 15	6 13	5 19	8 22	6 11	5 21	8 29
17	T	6 15	5 15	9 16	6 14	5 17	9 23	6 12	5 19	9 30
18	F	6 17	5 14	10 25	6 15	5 16	10 30	6 13	5 18	10 36
19	S	6 18	5 12	11 36	6 16	5 14	11 41	6 14	5 16	11 46
20	S	6 20	5 11	morn	6 17	5 13	morn	6 15	5 15	morn
21	M	6 20	5 9	0 51	6 18	5 11	0 51	6 16	5 14	0 57
22	T	6 21	5 8	2 6	6 19	5 10	2 8	6 17	5 12	2 10
23	W	6 23	5 6	3 23	6 20	5 9	3 24	6 18	5 11	3 24
24	T	6 24	5 5	4 43	6 21	5 7	4 41	6 19	5 10	4 40
25	F	6 25	5 3	5 55	6 22	5 5	5 55	6 20	5 8	5 45
26	S	6 26	5 2	6 56	6 23	5 4	6 56	6 21	5 7	6 51
27	S	6 28	5 0	8 0	6 25	5 3	8 0	6 23	5 6	8 0
28	M	6 29	4 59	9 0	6 26	5 2	9 0	6 24	5 5	9 0
29	T	6 30	4 58	10 0	6 27	5 1	10 0	6 25	5 4	10 0
30	W	6 31	4 56	11 0	6 28	4 59	11 0	6 26	5 3	11 0
31	T	6 33	4 55	12 0	6 30	4 58	12 0	6 28	5 2	12 0

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHAS'TON	CHICAGO.
1st Quart.	3 17 mo.	2 5 mo.	1 53 mo.	1 41 mo.	1 11 mo.
Full Mo.	11 4 10 mo.	3 58 mo.	3 46 mo.	3 34 mo.	3 4 mo.
3d Quart.	19 2 26 mo.	2 14 mo.	2 2 mo.	1 50 mo.	1 30 mo.
New Mo.	25 6 14 ev.	6 2 ev.	5 50 ev.	5 38 ev.	5 08 ev.

Terms—Publishers' Notices, etc.

For One or Two Subscriptions, One Year, the price will hereafter be (post-free) \$1.50 each, instead of \$1.60. (For 15 months, now, \$1.80.)*

[ALL POST FREE.]

Three Subscribers one year,	\$1, or \$1.33 each.	\$1.65
Four Subscribers one year,	\$5, or \$1.25 each.	\$1.55
Five Subscribers one year,	\$6, or \$1.20 each.	\$1.45
Six Subscribers one year,	\$7, or \$1.17 each.	\$1.40
Seven Subscribers one year,	\$8, or \$1.14 each.	\$1.35
Eight Subscribers one year,	\$9, or \$1.12 each.	\$1.30

Ten or more Subscribers, post-free, Only \$1 each.....

[* These 15 month's terms are added to accommodate those who may wish to begin with the October number, and continue through 1879, a period of fifteen months.]

Single Numbers sent, postpaid, for 15 cents each. Specimen numbers for examination sent, postpaid, for 10 cents each. Subscriptions can begin at any time.

The above terms are for the United States and Territories, and British America. Add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid. Remittances, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. Bound Volumes from Vol. 16 to 36 inclusive, supplied at \$2 each, or \$2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers in such volumes supplied at 10 cents each. Any Numbers of the paper issued for 21 years past, sent post paid for 15 cents each;

or any full year, sent unbound, for \$1.50.... Clubs of Subscribers can be increased at any time, at the club rates, if new members begin at same date as the original club.

Good Things Coming For All.

Useful, Most Desirable Articles,

TO BE HAD

WITHOUT MONEY,

AND

More Easily than Ever Before.

- First-rate (best) Sewing Machines
- Table Cutlery—Pocket Knives
- Spring Beds—Water-Throwers
- Tool-Holders—Guns—Pistols—
- Mens and Boys Pure Gum Boots—
- Seed-Drills—Seed-Sowers—Pianos,
- Household Articles—Family Games
- Amusing Things for Children—
- Organs—Tool Chests—Gold Pens
- Pocket Pencils—Writing Desks
- Work-Boxes—Boys' Wagons
- Bracket Saws—Embroidery
- Frames—Good Books—etc., etc.

Notwithstanding the Reduction in subscription prices, the Publishers intend to continue their long-established custom of sending Valuable Articles as acknowledgments, or Premiums to their friends who take the trouble to gather and forward lists of new and old subscribers to the *American Agriculturist*, and most of the articles are offered for a less number of subscribers than ever before, even at the reduced terms. It will therefore be easy for any one, anywhere, to secure one or several of these articles free, in return for very little time and trouble.

A few of these articles are described on page 398. A large, Illustrated Full Descriptive List of the Premiums offered will be ready on October 1st, or soon after, a free copy of which will be mailed to any and every one desiring it, who will send his or her full address on a Postal, and say, "Premium List Desired."

An Open Secret.

HOW CAN VALUABLE PREMIUMS BE GIVEN, WITH THE PRESENT REDUCED SUBSCRIPTION RATES?

Answer:—Our Readers are only asked to pay for the actual cost of making and mailing the paper to them—not all of that even. Good advertisements (only) are inserted for the three-fold purpose, of furnishing reliable business information to the readers, of supplying the deficiency in the cost of the paper not met by subscriptions, and for a reasonable business income to the proprietors.

Increased Circulation brings more advertising receipts. So the Publishers pay, out of the advertising receipts, premiums to those who assist in keeping up and increasing the number of subscribers.—More circulation also brings more readers to be benefited by the paper, and that, of course, is gratifying to the Editors.

Instead of Cash premiums, the Publishers arrange to supply good, useful, desirable articles, which they buy in large quantities, at the lowest wholesale cash rates, and pay for in part by advertising. In this way they can give much larger premiums than they could in cash, while the articles are just as valuable as money to those receiving them, even more so, as they are sure of being reliable.

It is a good thing all around: The Premium receivers get good articles, free; the new subscribers brought in are set to reading and thinking, which pays them; the manufacturers of good articles have them brought prominently before the public; the circulation of the paper is increased, and advertisers reach a wider field, and pay more; the Publishers thus have more receipts, and can make a better paper, and every reader gets the benefit.—There is abundant room for every one who wishes, to secure one or more of the premiums. Though almost every copy of the *American Agriculturist* is read by a good many persons, probably its total number of readers does not exceed two millions; so there are forty-two millions more in this country who ought to read it. Any one can find near him a few, if not many, persons who may be gathered in a premium club.

The Good Watch

Still Available.

Since offering this watch, as described on page 354 of the September *American Agriculturist*, the Publishers have purchased all the watches of this form and kind they could obtain in this country, and have ordered more from the Manufactory in Switzerland. Each one is started and run a few days before sending out, and regulated to within a few seconds of variation per day at ordinary temperature. Of course it is understood by all, that any watch will run a little slower in hot weather, and a little faster in cold weather, unless it be provided with a "compensating balance," which is only used in very costly time-keepers. All these watches that we have yet tried, when regulated, run to within a few seconds per day in the usual temperature. Indeed a good many of them, after a week's regulating, have run to within two to three seconds a day. *It is the best watch for the price we have ever seen*—better than we ever expected to find at so low a rate.

A large number of requests are daily coming in from those who wish the offer extended, so that they may have more time to raise the requisite club of subscribers. In response to their requests, and as we have the promise of an additional supply at an early day, we shall continue the offer for the present, or until further notice, upon the same terms as stated last month. For particulars, see page 354 of our last paper (September number).

These watches are designed for a special premium, but so long as a full supply can be obtained for this purpose, single watches will be sold to our readers who desire them, at \$10 each, as announced last month.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of new subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful, successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued, or contains so much useful information and so many engravings.

Reliable Business Men, those who have both the ability and the intention to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price; and they try to live up to it, and generally

do, though once in a while they may make a mistake—to err is human—but this seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of trustworthy information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

Failure of a Commission House.—The firm of Hull & Scotney, commission merchants of Philadelphia, have failed. The remaining partner, Mr. Scotney, writes that he was taken ill at the time, and for that reason did not notify us, hence the advertisement appeared in the usual place in our columns, a month after the firm had ceased to exist.

The Asbestos Liquid Paints of the H. W. Johns Mfg. Co., have had remarkable success. They commenced making the paints a comparatively short time ago, and are already the most extensive manufacturers of paints in the country. The Company, No. 87 Maiden Lane, N. Y., offer special inducements to those who wish to introduce these paints in places where they have no local salesmen, and suggest that those seeking employment, or wish to add to their income, correspond with them with a view to business.

"Ashton's Factory Filled Salt" Premiums at the Dairy Exhibition.—Messrs. Nicholas Ashton & Sons, Liverpool, Eng., have written to their agents, Francis D. Moulton & Co., as follows: "We notice, with great interest, the movement for an International Dairy Fair, to be held in New York during the coming autumn, and trust it may meet with the success which the importance of the industry it will represent should command. We authorize you to offer to the Executive Committee five hundred dollars in gold for premiums, to be awarded to those who exhibit the best butter and cheese salted with Ashton's Factory Filled Salt. We leave to your judgment the conditions under which the awards shall be made." In accordance with the above, the following premiums are offered by Francis D. Moulton & Co.: "1st. For the best lot of cheese made with Ashton's Factory Filled Salt, whether from Canada, New York, New Jersey, or the New England States, \$125. 2d. For the same from Pennsylvania, Ohio, Michigan, Wisconsin, Indiana, Illinois, Iowa, Kansas, Nebraska, or Minnesota, \$125. 3d. For the best butter made with Ashton's Factory Filled Salt, whether from Canada, New York, New Jersey, or the New England States, \$125. 4th. For the same from Pennsylvania, Ohio, Wisconsin, Indiana, Illinois, Iowa, Kansas, Nebraska, Michigan, or Minnesota, \$125."—We trust that the competitors for these very liberal premiums will be numerous, and add greatly to the interest in and success of the exhibition.—N.B.—As will be seen by the advertisement, this salt is now put up in bags of 56 lbs. each, for the convenience of families and small dairies, who do not care to purchase the large bags.

The "Forest Rose" Strawberry.—As this promises to hold an important place in strawberry culture, it is desirable that its history be accurately recorded. In describing this variety in Ang. last, Mr. Roe states that it was discovered by Mr. J. A. Fettes, of Lancaster, O., who sold out his right in it to Mr. Weltz. Mr. Fettes writes that this is not exactly correct; he has not sold his interest in it, but has made arrangements with Mr. Weltz to sell the "Forest Rose" strawberry for a limited time.

HAVE YOU A HOUSE To Build, to Plan, to Alter, to Repair?—If so it will pay to first get and read Reed's "*House-Plans for Everybody*," just issued. It is full of plain practical suggestions all about houses. It gives engraved plans of 36 different houses, ranging in cost all the way from \$250 to \$8,000 each, illustrated by 175 engravings; describes the materials required, the items of cost, etc., etc. If one is to spend only \$25 to \$50 in repairs or changes, this book will save much more than its cost. Considering its size, its engravings, its real value, it is probably the cheapest book on house-building ever issued. The price, sent anywhere in the United States, post-paid, is only \$1.50. Published by Orange Judd Company.

Sending Goods to New Zealand, Australia, etc.—New Zealand has a very large number of readers of the *American Agriculturist*, many of whom often write to us for information, which of course we are always glad to supply when practicable. Some queries are just at hand as to the shipping of goods there from America, particularly referring to advertisers in this Journal. There is a line of vessels running be-

tween New York and Anstralia, New Zealand, and the East, called the "Pioneer Line." The freight tariff varies with the season, and ranges from 27½ cents to 30 cents per cubic foot. In ordering goods of any of our advertisers, money in amount equal to the mentioned prices only need be forwarded, and the freight can be paid on receipt of goods. When convenient, it is well for neighbors to club together, and send their combined orders to some trustworthy person here, who will see that all are properly filled. Any thing that we can do in the way of purchasing and forwarding desired articles, we will very cheerfully attend to.—Messrs. R. W. Cameron & Co., of this city, make it their business to effect purchases in all parts of the United States, and will send them to any part of Anstralia, New Zealand, and the East, in consideration of a commission of 2½ per cent. Their agents in Dunedin and Christ Church are Messrs. Dalgety, Nichols & Co.; in Melbourne, Stuart, Couche & Co., and in Sydney, R. Towns & Co.

Living Plants in the House are always desirable on many accounts. They give pleasure, and cultivate a taste for the beautiful—in children even. The best information ever given to enable the inexperienced to grow plants successfully, is supplied in a valuable book just issued, entitled "*Window Gardening*," in which the author talks from successful experience and practice. The cost of the book is only \$1, including postage, to any part of the United States. Orange Judd Company, Publishers.

All About Manures, and Manuring.—This topic, so important now to every farmer, is treated very fully in a Book just issued. It is the result of many years' experience and observation by an educated practical farmer, the author of "*Walks and Talks Upon the Farm*," etc. Every cultivator would find it worth many times its cost. The information is given in plain conversational language, adapting it to the comprehension of all classes. Price only \$1.50, postage included. Sent by Orange Judd Company on receipt of price.

Fine Gladioluses.—On July 15-17th, Messrs. C. L. Allen & Co., of Quecus, N. Y., made, at the auction rooms of Messrs. Young & Elliott, No. 12 Cortlandt St., an exhibition of Gladioluses, which was large and fine. The display has never been equalled in this country, and it is doubtful if it could be excelled abroad. Besides the standard sorts, there are thousands of seedlings, some of which are of great merit, and the result of years of careful labor in this specialty.

Embellish the Stable.—Coachmen, hostlers, and other stablemen, take pride in the appearance of their animals and their surroundings. We often see stables embellished by pictures of famous horses, and if nothing else is at hand, advertisements of stallions, announcements of races, etc., are put up in conspicuous places, that might well be occupied in a more useful manner. Doct. Liataud has just prepared, and the Orange Judd Co. has published, a chart which may well have a place in any stable, large or small, as while it gratifies the common desire to decorate, it can not fail to prove useful. The chart gives, by the aid of abundant engravings, and brief, though sufficient descriptions, the method of telling the ages of domestic animals; especial prominence is given to the horse, but cattle, sheep, pigs, and dogs, are illustrated also. The appearance of the different teeth at the various periods of the animal's life, is distinctly given in the engravings, while the descriptive matter is arranged in a table that admits of ready reference. This chart gives the information that might be spread over the pages of a considerable volume, and has the advantage over that in presenting the whole subject to the eye at once. A great deal may be done in the way of teaching, without assuming to teach, and many, with this chart constantly before them, will become familiar with its contents without knowing it, while the same presented in a book form would be disregarded. The chart is 24½ by 21½ inches, on heavy card-board, and may be framed or not, as one fancies. Sent by mail, post-paid, for one dollar.

"Birds of all kinds, and their plumage, are much used for house decoration," is given in the "*Home News*," of a daily paper, and very unpleasant "news" it is. We were rejoicing that the custom of killing every thing guilty of no other crime than that of wearing feathers, for the decoration of bonnets, or hats, was abating, and here "bird murder" appears in a much worse form—"House Decorations" indeed! Women—Ladies (if you please), can do much to control this kind of decoration—or desecration. We appeal to them not to countenance the killing of God's most beautiful creatures, that their skins may be degraded to the uses of wall paper. If we tolerate this, do we not deserve a greater plague of insects than we have yet suffered? Let every woman resolve to tolerate no ornament on her person, or in her house, that will encourage bird killing.

American AGRICULTURIST.

NEW YORK, OCTOBER, 1878.

The Guernsey Cattle.

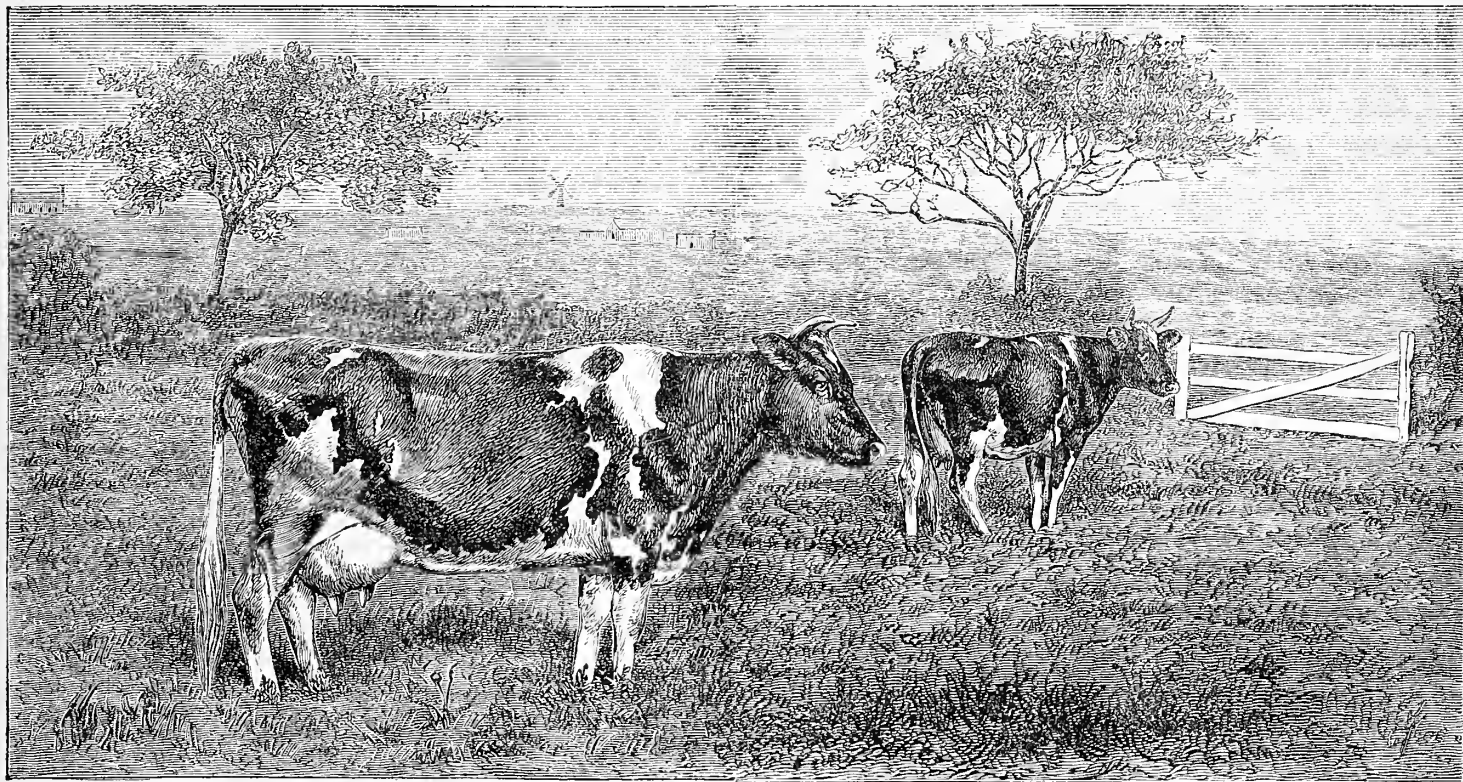
The Guernsey breed of cattle is now receiving considerable notice from our breeders. In this country the Jerseys have heretofore monopolized most of the attention bestowed upon Channel Island cattle, though the number of Guernseys exported is large. The average yearly number of cattle sent from the island of Jersey is about 2,000, and from Guernsey half that number. Of the many thousands thus exported, comparatively few have

of the Guernsey cows that we have seen, are nearer the ideal cow than any others we have met; their rich color, large, fine bodies, handsome proportions, fully developed udders, and other "milk signs," together with their docility, and their rich and generous milk and butter yield, make them a distinct and characteristic breed of dairy cattle. The Jerseys hold a justly deserved prominence as butter producers, and it is safe to predict that their numbers will greatly increase. The recent numerous sales indicate an increase in the importations, notwithstanding the fact that some of our breeders are now breeding just as good Jerseys as can be found anywhere in the world. The rapid depletion of the herds of the "mother country" under the annual culling out of 2,000 animals for exportation, renders this state of affairs inevitable. It is a fact, that the best Jersey cows, both on the Island and in this country, closely resemble the Guernseys in

ton. Careful experiments place well cured corn-stalks as worth about three-fifths as much as hay.

Fodder Stacks.—Much has been previously said in the *American Agriculturist*, as to the methods of curing corn-fodder. A caution may yet be given. *Let the stalks be thoroughly cured before being stacked.* Small stacks will not readily heat and mould; large ones will. Put a ventilator, if only three or four rails set on end, spread below, and tied at top, in the middle of the stack. Carefully build, or protect them on top, so as to shed water. Better finish the

Husking, if possible, while it is still pleasant weather. It is disagreeable work on a raw November day, when fingers get numb, and the body chills quickly. Last year we saw farmers with wives and children thus employed, when snow was on the ground and all through the stooks. And so it will be again with others who are behind hand.



FIRST PREMIUM GUERNSEY COW, "LADY JANE," AND GUERNSEY HEIFER.

come to this country. The engraving represents a scene in a pasture on the farm of Mr. Rendle, at Catel, Island of Guernsey, with a view of the farm buildings in the distance. The cow in the foreground, owned by the gentleman above named, is "Lady Jane," a first prize winner at the fairs for many years, and an excellent specimen of the breed.

The Guernseys are similiar in build to the Jerseys, though larger and inclined to flesh, and not so stylish. Their color is usually a rich fawn, with much white; the muzzles and eyelids are buff; in fact, all the "points" are light, offering a strong contrast to the black points of a fashionably marked Jersey. The Guernsey is a deep milker, producing the yellowest of butter of superior quality. Some good judges, familiar with both breeds, place the Guernseys ahead of the Jerseys as butter makers; while their size and capability of taking on fat when they cease to be useful for the dairy, render them a desirable breed. One farmer of our acquaintance, who has an excellent herd of both of these breeds, says the admixture of the cream from Guernsey milk with that from Jerseys gives the butter a deeper, richer color, and makes it bring a higher price than that from the Jerseys alone. The Guernseys being, as a rule, larger milkers, consequently yield more butter, but the quality of that made exclusively from their milk is not quite equal, as it lacks something of its delicate flavor, to the best Jersey butter. This experience indicates, that one or two good Guernsey cows in any herd kept for butter, would probably improve its product as a marketable article. Some

size and general appearance—a fact which speaks strongly for the Guernsey type as one to be regarded by breeders of dairy stock of any kind.

Hints for Work.

Be Prompt now, when the days are shortening and the season for field work is rapidly nearing its end. Utilize every hour for securing the crops yet ungathered. Neglect no chance for putting the ground in order for spring work, but turn every fair day to account, that nothing be neglected.

Make a Note of what Remains to be Done.—There are a score of things to be done on every farm that may be considered of little account singly, but which in the aggregate make up a serious total. Every one should look about, note down what needs to be done, and frequently examine the record.

Cutting Corn.—Every day the corn remains uncut, after maturity, there is loss. Corn gains nothing by standing after the kernels are glazed, but the fodder loses rapidly in quality. Much of its digestible matter is changed into woody fiber, becoming hard and undigestible. The sooner it is cut and shocked, the sooner it can be housed in safety.

Corn Stalks are no longer to be considered as a waste product, good for nothing but to be trodden under foot. They are worth fully the cost of putting in the crop, if well saved and cured. When cut at the right time, and well cured, six dollars a ton is, by many, considered a reasonable estimate of their value for feed, when hay is worth \$10 per

Husking Machines have been much improved since first brought out. For a thousand bushels of corn it will pay to use a power husker. By and by, the thrasher-men will have machines to do this work, and shell the corn at the same time.

Grinding with the Husk.—Some of the steel and chilled iron corn-cob mills will grind corn in the husk. For cows, cattle, hogs, and mules (and perhaps horses, when it is carefully used), it may be thus ground, conveniently and economically. The corn may be cribbed in the husk, and used as required. If not perfectly dry, grind small quantities at a time, as it will heat if kept in large bulk.

Wheat may yet be sown south of latitude 40° or 41°, if done without delay. If the soil is well drained and in good condition, this late sowing may sometimes be better than earlier, as the crop is thus more likely to escape the Hessian fly.

Harrowing Wheat in the fall should only be done when the surface of the land is dry. No kind of cultivation should take place when the ground is wet. Experimental cultivation should be done as early as possible. Deep plowing is not needed. To kill weeds and mellow the surface are what is wanted. Harrowing may be done safely two weeks after sowing, and repeated twice or thrice. Then

Grass Seed May be Sown, but not before. It will take at once on the mellow soil, and soon get ahead of that treated in the usual let-alone manner.

Wheat and Grass Fertilizer.—Wheat needs nitrogen at this season, and so does the grass. 100 lbs. per acre of nitrate of soda would be a help to both,

Green Fodder for Spring.—Rye may be sown any time this month; the sooner the better for early spring feed. Sow thickly, 4 bushels per acre, and fertilize well. Where the winters are open, as in the border and Southern States, this will make excellent winter pasture and give a crop of grain or green fodder besides.

Mangels and Beets are injured by frost. These should be gathered and secured in pits this month, where frost is prevalent. The fresh leaves have an injurious effect upon cattle if fed in excess. A day or two after cutting, they may be fed safely—a pressed bushel-basketful at a time, sprinkled over with a handful of salt.

Turnips will resist considerable frost and grow rapidly in cool weather. If standing too thickly in the rows, thin out, using those removed as fodder. If fed to cows, they should be given at milking time. The flavor will disappear before 12 hours have expired, and will not materially affect the milk.

Horses that have been on pasture, should now be taken up at night, and have some dry feed.

The Change of Feed, from green to dry, should be gradual with all stock; otherwise, the appetite may fail, and the animals lose thereby.

Milking Cows can not be kept in full flow without ample rations of fresh fodder. As the pastures become bare, newly eured corn-stalks, cut and mixed with chopped roots and sprinkled with middlings, and ground corn and oats, may be given. Liberal feed always pays with the right kind of cows.

The Aim in Feeding, now, should be to get the stock into good condition before cold weather, remembering that an animal beginning the winter well, is as good as half through it already.

Sheep, if fed liberally, and managed carefully, are most profitable stock. The better we do for them, the better they will do for us; badly managed, they are likely to prove a failure.

For March Lambs, the ewes should be coupled this month. The best ewe is a common grade Merino, or native sheep. For the earliest, those which come from Ohio, or Western Pennsylvania, weighing about 90 to 100 pounds, are excellent for this purpose. A pure South-Down ram, and next, a Hampshire-Down, and next, a Cotswold, is the best animal to cross upon these. A plump, fat lamb of moderate size, will bring more than a "scrawney" one half as big again. The black face and legs of the "Down" breeds are desirable in market lambs.

Feeding Sheep for Market, is a profitable business for those who have judgment to buy well, to feed well, and to sell well. Two profits can easily be made: A big manure heap, and good pay for feed and care will be returned to the skillful feeder. For more detailed information, "Stewart's Shepherds' Manual" may be consulted.

Winter Rape, for winter and spring feeding for sheep in the South, may be sown early this month. Five pounds of seed per acre, if planted in drills; or if broadcast, 8 pounds will be needed. It may be fed off by penning the sheep upon the crop as soon as it has sufficient growth. The surplus may be plowed under in the spring as an excellent preparation for oats or corn. This has been grown advantageously for this purpose as far north as Rochester, N. Y., the sheep even leaving a warm shelter and pawing away the snow to find it.

Swine.—Brood sows should be well fed now, so that they will be in good condition for coupling next month for March pigs. Grades or half-breeds of any good breed are more profitable than full-bloods for the farmer. Keep no pig over a year old for fattening, if the most profit is looked for.

Feeding for Pork, may best be begun at once, using up the soft and poor corn first. Some feed green stalks, cut fine, and mixed with meal; this will bring the pigs into a thrifty condition, to be finished very rapidly in November.

Full Pigs, may be carried over on skim milk, a few cut corn-stalks, potatoes or roots, with a little bran, and plenty of fresh water.

Water.—It is a great mistake to stint animals in water; 75 per cent of their weight is water. Digestion cannot go on without it. Water is therefore

food in one sense, and an ample supply should be provided for every animal to drink when inclined.

Poultry.—If eggs are expected during the winter, they must be provided for now. Dispose of the old hens; select as many of the best young pullets and feed them well. Give wheat soaked in hot water, once a day. Barley, buckwheat, and corn, in equal proportions, may make the rest of the food; chopped cabbages will help. Provide clean quarters, plenty of water, gravel, old mortar, and charcoal. Make the house warm; do not crowd too many into it, and a good supply of eggs will result.

Notes for the Orchard and Garden.

In many portions of the country, there has been such an excess of rain, that artificial watering has not suggested itself. The summer of last year, as well as the one just past, having been unusually moist, there is the greater probability that the coming one will be dry. There are few localities that do not have their years of drouth, and when the facilities are at hand, there should always be provision for irrigation. It may be that watering will be really needed but once in three or five years; it is this uncertainty that makes it all the more necessary to be prepared for drouth when it does come. Every experienced fruit grower has known seasons when an abundance of water would have given him a yield of strawberries, the profits on which would have paid for a much larger outlay than is ordinarily required to provide means to irrigate the whole garden; and so with other crops. In our uncertain climate, the control of water in both directions is necessary to the best success. Ability to remove excess by drainage, and to supply the deficiency by irrigation, give the enterprising cultivator a great advantage over the one who "takes things as they come." This is a most favorable month for all work requiring the removal of earth, and such improvements as road making, grading, etc., are not only more sure of being made, but they will be better done now than in the busy, but often cold and cheerless days of spring.

Orchard and Nursery.

Last month's Notes on fall planting, are timely now. With some fruits this is a year of abundance, and as usual in such seasons, only the best fruit sent to market in the best shape will pay

Freight and Charges, which are likely to be as much on a barrel of poor fruit, as on one of the choicest. While the poor fruit may be turned to account at home, if only fed to the pigs, when sent to market, it may bring the shipper in debt.

Apples are generally barreled in the orchard as they are picked, but the long keepers are considered to keep better, if allowed to lie in heaps two or three weeks before barreling; the skin toughens, and they lose some moisture. We generally advise making two sorts for market, and a third to be kept at home. When fruit is so abundant as now, the "seconds" will hardly sell at all.

Firm Packing is essential; when the barrel is half full shake gently, just enough to settle the fruit; do the same when the barrel is nearly full, and put on enough by hand to form a level layer—projecting sufficiently to require strong pressure to bring the head to its place.

Barrel Presses, working with a screw, are sold at the agricultural ware-houses, or a lever may be rigged to answer the purpose. The fruit must be pressed so firmly that it will not move in handling. Mark the opposite head, as the one to be opened.

Winter Pears are similarly treated; choice table kinds are generally packed in half barrels, and very select specimens, in shallow boxes, holding a single layer, each pear wrapped in tissue paper.

Quinces are packed in barrels or crates; handle carefully to avoid rubbing off the bloom, and mark on the package the number of quinces, as in most markets they are sold by the hundred.

The Fruit Cellar should be in readiness, but the fruit may be kept under a shed or elsewhere until there is danger of freezing. In storing, put the

barrels of earlier ripening sorts nearest the door. Provide ample ventilation under control, and tight, easily managed windows shutters; in mild weather, open at night and close during the day....In seasons of abundance, much fruit will be made into

Cider, especially as a step towards vinegar. As the richest juice makes the best cider, so the better the cider the finer the vinegar, though poor fruit will make a better article than is usually sold. Those who make vinegar only occasionally will hardly be at the expense of a special building for it.

Patent Vinegar Processes are advertised, some of which are merely well known directions sold at a high price, and come very close to being frauds—we have no confidence in any of them. On the other hand, some of the vinegar-making devices we have known are useful. To make good vinegar

The Essentials are: good cider, a temperature of about 70°, and as complete exposure to the air as possible. The devices offered act upon the principle of exposing cider to the air in shallow trays. A cask half filled with cider, with bung out, in a warm room, will become vinegar much sooner than a full cask, bunged up, in a cool cellar.

Vinegar-making is a sort of fermentation greatly facilitated by a kind of low microscopic plant, popularly known as the "mother" of vinegar. Placing cider in old casks containing this, and mixing cider with old vinegar, hasten the process.

Pomace is usually thrown in a heap where it remains a nuisance for a long time. Cattle and pigs will consume a little of it, but there is not much nutriment in it, and it is better to break it small and put it in the manure heap.

Heeling-In may be done in such a manner as to greatly injure young trees, but if properly done the objections often made to the practice have no weight. As a general rule, if one is at a distance from nurseries, and intends to plant in spring, it is better to procure his trees in autumn, heel them in, and have them at hand ready to plant in spring. The trees are likely to be taken up with better roots, and the risks of injury in transportation are less. Heeling-in consists merely in burying the roots and parts of the stems of the trees in a dry mellow soil. If set upright they are more exposed to the weather, but there is less danger from mice than if slanting. The usual method is to open a trench, lay in the trees in a sloping position, and fill in with earth. See that no unfilled spaces are left around and among the roots, and that the labels are all right, and finish off with several inches of soil patted well with the spade.

Various Matters.—*Top-dress* the Orchard with fine manure this month, or later....Leave no dead weeds, grass, or other rubbish near young trees to harbor mice....Recently planted trees should have a conical mound of earth, about a foot high, around them.

Fruit Garden.

Last month's Notes are mainly seasonable now. It is often well to protect plants that are really hardy, the protection being not so much against the severity of the cold as the sudden alternations. This being the case, the protecting material must not be applied too early, it being quite soon enough when the ground begins to freeze.

Strawberries are sometimes injured by too much covering; the straw, marsh hay, or other material, should be placed freely upon the soil, but only an inch or two thick over the plants themselves.

Raspberries of tender sorts are laid down and covered with a few inches of earth. This is quickly done by two men—one to bend over the plants and the other to put on the soil.

Grapes.—See directions for picking already given. We are often asked how to keep this fruit. Many tons are sent to market for the holidays, preserved by boxing them, as described last month, and keeping in an even temperature just above freezing. It must be borne in mind that there are good and bad keepers among grapes, as there are among apples and pears. The Concord, for example, will keep but a short time under any conditions; Delaware is somewhat better; Diana is one of the longest

keeping, while Catawba and Isabella are excellent in this respect, tous being preserved every year.

Pears.—The treatment of winter fruit is mentioned under Orchard. That upon the shelves of the fruit-room needs frequent examination, that those in proper condition may be used when ready.

Kitchen and Market Garden.

In many localities the garden will go into "winter quarters" this month, and where this is postponed for a while, operations should be made in anticipation of the first heavy frosts. Tropical plants, like tomatoes, Lima beans, squashes, etc., succumb to the first frost; beets, carrots, celery, etc., are less sensitive, while parsnips and salsify endure the coldest weather without injury.

Cold Frames should be made ready for cabbages, cauliflower, and lettuce. Choose a spot of light and dry soil, in a sheltered place; if no spot protected by a fence or building is available, a temporary fence may be put up at the north side. If the plants are only to be protected, and are not expected to grow, a very rich soil is not needed. If the frames are to be used afterwards for growing plants, then the soil should be well fertilized; in any case it should be spaded and made fine, removing all stones, etc. The rear of the frame is a plank, 12 inches wide, and the front 8 inches, and far enough apart to accommodate the sashes; the length will be governed by the number of sashes; the ends are closed by properly shaped pieces of plank. It is well to place strips from front to rear where each two sashes meet, for these to slide upon; the ends of these slides are dovetailed into the edges of the front and rear planks, and it is convenient to have a narrow strip placed lengthwise in the center of each, to separate the sashes, and allow them to run regularly, when moved upon them.

Pricking out the Plants is done from the middle of this month to the middle of next. They are set 2½ to 3 inches apart each way for cabbages and cauliflowers, and 2 inches for lettuce. The first two must always be set in the soil down to the first leaf, to protect the stem, the earth being pressed firmly about them. Water, and if the sun shines, shade for a day or two. The sashes will not be needed until there is freezing cold weather. In Virginia and southward,

Ridges supply the place of cold frames for cabbages; the soil is thrown up into ridges a foot or more high, running east and west. Instead of setting the cabbage plants in cold frames, they are planted in November on the south side of the ridges; in very cold weather cover lightly with straw or litter. As the plants are to grow here, the soil between the ridges must be well fertilized.

The Storing of Roots and other crops must be provided for. The plan of filling up the cellar of the dwelling with various kinds of vegetables is objectionable. Small quantities for immediate use may be kept there, but the bulk of them should be stored elsewhere. Roots for table use should be placed in the cellar in bins, boxes, or barrels, with sufficient earth among and over them to prevent shrivelling. If there is no root cellar, the plan of storing in pits or trenches is an excellent one.

Pits for Roots must be made where water will not stand on the bottom; they are dug 3 or 4 feet deep, 6 feet wide, and as long as needed. The roots are stacked in these, beginning at the end of the pit, and fill 2 feet of its length; a space of 6 inches is left, and another section of 2 feet is built up, and so on, in each case piling the roots up to the ground level; the spaces are then filled in with earth, and the pit will present a series of sections of 2 feet of roots, and 6 inches of earth. The roots are covered lightly at first, but when cold weather comes, put on about 2 feet of soil, rounded and smoothened, to carry off water.

Harvesting of Roots should not be done until the growing season is quite over. Beets and carrots have their sweetness injured by hard frosts; turnips may remain until there is danger of freezing; parsnips, salsify, and horse-radish being perfectly hardy, many dig of these only what will be wanted

while the ground is closed, thinking that they are improved by freezing.

Sweet Potatoes are to be dug as soon as the vines are touched by frost, and allowed to dry in the sun; large quantities are kept in houses that can be warmed to a temperature of 60°. Small quantities may be kept in a warm closet or other warm place.

Squashes will not keep if the least touched by frost. If a frost is threatened, gather and place in heaps, and cover with the vines. Handle with great care not to bruise them, and store in a warm place.

Tomatoes.—The season may be prolonged by covering a few vines with a barn-sheet or other cloth, to carry them through the first frost. If the partly ripened ones are picked and placed in a greenhouse or frame, or a sunny window, they often ripen up.

Celery should have the stems brought up together, and the earth, first loosed with a hoe, brought to and pressed around it with the hand, sufficient to keep the leaves in an upright position. This "haudling," as gardeners term it, is all that will be needed for the portion to be stored for winter; that wanted for early use must be hanked up with earth, quite to the tops, using the spade for the work. In the climate of New York, it is not stored for winter until next month.

Spinach and Sprouts, in order that they may be of a good size to winter over, need frequent hoeing so long as growing weather continues.

"*Making Garden*" is usually put off until spring, but the work should be commenced now by manuring and plowing wherever the crops are off. If new land is to be added, or a new garden made upon land in grass, apply a liberal dressing of manure and turn under the sod.

Et cetera.—Gather up all refuse and take to the pig-pen or compost heap, as may be.... Burn all weeds that appear seedy.... Provide covering material, such as leaves, marsh hay, etc.... Gather sweet-herbs, tie in small bunches, and hang in an airy place to dry.... Chickweed, common in the older States, will flower and produce seeds when not actually frozen—clear it off.

Flower Garden and Lawn.

In last month's Notes, we made some reference to the destruction of lawns by the "white grub." Since then we have seen most melancholy evidence of its ravages. In some parts of New England, especially near Boston, the owners of fine lawns are well nigh discouraged. The "white grub," the larva of the "May-bug," "June-bug," or "Dor-bug," as it is variously called, has utterly ruined the turf. These grubs work just at the surface of the soil, eating the roots of the grass as they go, so that large sheets of turf may be lifted as if it were a blanket. As grubs they last three years in the ground, and these appear to be in their second year. So numerous are they that 12 bushels were taken from one place that we visited. The trouble was not discovered until the work was done; had the presence of the grubs been known early in the season, frequent rollings might have saved the grass. Of course the only thing to be done was to make the lawn anew. Some made applications of alkalies and acids, and think they have saved their grass; such are deceived by the growth of annual grasses, such as Crab-grass, (*Panicum sanguinale*), Barn-yard Grass (*Panicum Crus-galli*), and other late comers. The only remedy is to remove the remains of the old turf, gathering and killing the grubs that are found, prepare the ground, and seed anew. Crows, blackbirds, and other birds were constantly at work, digging for the grubs, and though they destroyed many, the proportion, as compared to the whole, was small. It is impracticable to attack the insect in the grub state, as it is hidden from sight, but there must be a combined effort to trap and destroy them in the perfect state of beetles, else this severe loss may occur again. It is no small expense to relay 10 to 20 acres of lawn—besides, these grubs do not confine themselves to grass alone, but feed upon almost every growing thing that comes in their way.

Chrysanthemums to bloom in-doors, should be potted, and those to remain in the open ground will need stakes before the severe storms come.

Spring Bulbs should be planted as soon as they can be had from the dealers. Those who are not fanciers, but wish a general effect, without regard to names, can buy assorted Hyacinths, Tulips, etc., by the dozen, of the dealer's selection, much cheaper than named kinds. Double Tulips are very showy, they make a blaze of color, and are deserving of more attention than they receive.

Bulb Beds need a light, open, and very rich soil; the general rule is to put the bulbs below the surface to a depth equal to their own thickness.

Crocuses and Snow Drops may be put in patches here and there in the grass, and left to themselves.

Old Bulbs.—Those which were taken up from the beds last summer, and those that flowered in pots, will never bloom so well again; these may be planted in clumps here and there in the edge of shrubbery and in the border. Their flowers, while far below the "standard," are very useful for cutting.

Protection from Frosts.—In the climate of New York, we usually have two or three nights of frost at first, and then some weeks of the finest possible weather, and it pays to be at some trouble to protect tender plants during these early frosts; a light sheet, or even newspapers, if over beds of coleus, cannas, geraniums, etc., will save them from these first frosts, and much prolong their bloom.

Cannas do not keep so well if the foliage is killed by frost, and to have sound roots the tops must be cut away as soon as they are slightly tipped.

Dahlias.—When the foliage is killed, cut away all above ground, and leave the roots until a bright, warm day; then dig them early, handling carefully, as they break easily; fix the label securely to each, and allow them to dry in the sun all day. Store in a place that will keep potatoes in good order.

Tender Bulbs, like Tiger-flowers, Gladioluses, etc., must be lifted before the ground freezes, and stored in a cool, dry place. Tuberoses that have not yet flowered, or have yet many buds, may be lifted and put in boxes of earth; placed in a greenhouse or sunny window, they will finish blooming.

House Plants, if any are still in the borders should be taken up without delay. See article on "Preparing for Winter," on p. 352.

A covering of leaves, straw, or littery manure, while not absolutely needed, may be given to most hardy herbaceous plants with benefit; it will cause a stronger bloom in the spring, while it will be of great service to those that are barely hardy.

Leaves should be raked up not only as a matter of neatness, but for the sake of the leaves, which are one of the best possible covering materials.

Greenhouse and Window Plants.

The chief work with these, is to prepare them for their winter quarters, as indicated last month, which is supplemented by an article on a subsequent page (382), and these together give about all that need be said on preparing for winter.... We must emphasize the necessity for a

Gradual Change from the open air to the confinement of the house. Plants in the greenhouse and in windows, should have full air on pleasant days.

Plants for Forcing.—Many of the early blooming plants, including shrubs, force readily, even in window culture, and give an abundance of bloom in February and later. Among the most useful are Perennial Candytuft; Bleeding Heart (*Dicentra*); Japan Astilbe (incorrectly, *Spiraea Japonica*), and Lily of the Valley, among herbaceous plants, and in shrubs: Slender Deutzia, Thunberg's Spiraea, and even small plants of Weigela, Forsythias, and Dwarf Lilacs may be used where there is room. These should be taken up and potted as soon as growth ceases, and placed in a cool cellar or in a pit where they may freeze, if it so happens, without injury. The end of December or early in January, is soon enough to bring them into a warm room.

Bulbs may be grown in water, if one fancies, but the bloom is never so satisfactory as from those potted in rich soil. Pot early in good garden soil enriched with cow manure, and add enough sand to keep it open. The catalogues give descriptions of the various bulbs, with full details on their culture.

Commercial Matters—Market Prices.

CURRENT WHOLESALE PRICES.

	Aug. 12.	Sept. 12.
PRICE OF GOLD	100 1-2	100 1-4
Flour—Super to Extra State	\$3 45 @ 4 50	\$3 25 @ 4 40
Super to Extra Southern	3 40 @ 4 50	3 35 @ 4 30
Extra Western	3 30 @ 4 75	3 35 @ 4 75
Extra Genesee	4 25 @ 5 75	4 40 @ 5 75
Superfine Western	4 30 @ 4 00	4 35 @ 4 00
Rye Flour, Superfine	2 70 @ 3 40	2 65 @ 3 25
Corn-Meal	2 35 @ 3 00	2 35 @ 2 85
Buckwheat Flour, #100 lbs	— @ —	2 60 @ 2 85
Wheat—All kinds of White	1 00 @ 1 25	98 @ 1 17 1/2
All kinds of Red and Amber	90 @ 1 15	85 @ 1 09
Corn—Yellow	47 @ 55	49 @ 56
Mixed	44 @ 50	47 @ 51
White	48 @ 60	48 @ 58
Oats—Western	29 @ 39	24 1/2 @ 37 1/2
State	30 @ 39	28 1/2 @ 37 1/2
Rye	61 @ 69	50 @ 61
Barley	32 1/2 @ 1 25	30 @ 1 25
Barley Malt	63 @ 1 25	65 @ 1 25
Hay—Bale, #100 lbs	30 @ 40	30 @ 45
Straw, #100 lbs	20 @ 45	25 @ 45
Cotton—Middlings, #10	12 @ 12 1/2	11 1/2 @ 12
Hops—Crop of 1878, #10	— @ —	14 @ 18
olds, #10	1 @ 3	1 @ 2
Feathers—Live Geese, #10	35 @ 48	32 1/2 @ 45
Skin—Clover, West. & St. #10	Nominal.	7 1/2 @ 8 1/2
Timothy, #1 bushel	1 30 @ 1 45	1 27 1/2 @ 1 35
Flax, #1 bushel	1 35 @ 1 40	1 48 1/2 @ 1 52 1/2
Sugar—Refined & Grocery #10	6 @ 8 1/2	6 1/2 @ 8 1/2
Molasses, Cuba, 50 test #10	30 @ 31	31 @ 32
New Orleans, #10	25 @ 28	28 @ 30
Coffees—(Rio de Janeiro)	13 1/2 @ 17 1/2	11 1/2 @ 17 1/2
Tobacco, Kentucky, #10	2 1/2 @ 5	2 1/2 @ 5
Seed, #10	3 1/2 @ 5	3 1/2 @ 5
Wool—Domestic Fleeces, #10	20 @ 41	20 @ 42
Domestic, pulled, #10	22 @ 40	20 @ 38
California, spring clip	12 @ 28	12 @ 27
California fall clip	12 @ 30	12 @ 30
Tallow, #10	6 1/2 @ 7	6 1/2 @ 7 1/2
Oil—Coke, #10	30 @ 50	31 @ 50
Pork—Mess, #10	10 75 @ 11 25	9 75 @ 10 60
Extra Prime, #10	9 75 @ 10 25	Nominal.
Berf—Extra mess	10 50 @ 11 50	10 00 @ 11 00
Lard, in tins, #10	7 35 @ 7 85	6 62 1/2 @ 7 10
Butter—State, #10	8 @ 23	8 @ 23
Western, poor to fancy, #10	5 @ 22	5 @ 22
Cheese—#10	8 @ 16	8 @ 16
Poultry—Fowls, #10	9 @ 12	9 @ 13
Chickens, #10	10 @ 14	10 @ 15
Penn., #10	14 @ 16	14 @ 16
Turkeys—#10	10 @ 16	11 @ 14
Geese, #10	90 @ 1 50	100 @ 1 75
Ducks, #10	45 @ 75	40 @ 75
Roosters, #10	50 @ 75	5 @ 6
Pigeons, wild, #10	75 @ 1 00	1 21 1/2 @ 1 50
Squabs, per dozen	60 @ 1 75	80 @ 1 00
Grouse, #10	— @ —	70 @ 75
Partridge, #10	— @ —	80 @ 1 00
Snipe, per doz.	— @ —	1 00 @ 1 50
Woodcock, #10	— @ —	70 @ 90
Red Birds, per doz.	— @ —	25 @ 35
Apples—new, #10	50 @ 2 50	50 @ 2 50
Pears, #10	2 00 @ 4 00	2 00 @ 4 00
Oranges, #10	3 00 @ 7 50	3 00 @ 7 50
Blackberries, #10	5 @ 10	— @ —
Plums, #10	5 50 @ 10 50	3 50 @ 9 00
Grapes, #10	— @ —	3 @ 10
Peanuts, domestic, #10	1 25 @ 1 75	1 20 @ 1 50
Beans—#10	1 25 @ 3 25	1 25 @ 2 50
Melons, per 100	8 00 @ 25 00	3 50 @ 20 00
Muskmelons, #10	40 @ 50	1 00 @ 1 50
Raspberries, #10	1 25 @ 5 00	1 35 @ —
Pears—Green, #10	75 @ 78	Nominal.
Canada, in bond, #10	65 @ 1 75	— @ —
Potatoes, new, #10	75 @ 1 50	1 25 @ 2 25
Sweet	— @ —	1 50 @ 2 25
Beets, #10	1 00 @ 1 50	1 00 @ 1 25
Turnips, #10	75 @ 1 00	1 25 @ 2 00
Tomatoes, #10	30 @ 1 75	3 1/2 @ 7
Catfish, #10	1 00 @ 5 00	— @ —
Squash, #10	— @ —	1 00 @ 1 50
Cabbages—new, #10	2 00 @ 6 00	— @ —
Onions—#10	50 @ 1 25	75 @ 1 25
Green Peppers, #10	— @ —	— @ —
Green Corn, #10	60 @ 75	50 @ 1 00
Egg Plants, #10	— @ —	1 00 @ 2 00
Letting, #10	50 @ 1 25	50 @ 1 25
Spring Beans, #10	75 @ 1 00	50 @ 1 00
Lima Beans, #10	— @ —	75 @ 1 00
Cucumbers, #10	75 @ 2 00	25 @ 50
Carrots, new, #10	1 00 @ —	87 1/2 @ 1 25
Okra, #10	— @ —	10 @ 13

Gold has been up to 100 1/2, and down to 100 1/4, closing Sept. at 100 1/2, as against 100 1/2 on Aug. 12; 100 1/2 July 13; 100 1/2 on June 13; 10 1/2 on May 13; 100 1/2 on April 17; 10 1/2 on Jan. 12; 103 on Dec. 12; 102 1/2 on November 12; 103 on October 12; and 103 1/2 on Sept. 12, 1877. Business in Breadstuffs have reached extraordinarily large proportions, during a month the receipts, sales, and shipments of grain, having been in magnitude, beyond precedent. The export operations were mainly in Winter Wheat, and winter wheat products, for French markets; in Oats, and Rye for France and Germany; in Corn for British ports; and in Flour for British, French, West India, South American and Provincial markets. Some important purchases of grain were also made for foreign markets, not usually supplied from this source. As to the activity, nothing more satisfactory could have been hoped for. In the way of prices, however, the opposite was quite generally true. Wheat, Flour, Rye, and Oats having yielded in value, under the increased and urgent offerings, the most serious fall occurring in wheat, especially winter grades of the new crop, which constituted the bulk of arrivals. Spring Wheat of the old crop was unusually scarce, and held with remarkable firmness, while of the new crop, very light receipts were reported, and consequently but little animation. Foreign advices at the close, are decidedly unfavorable to the export movement, which was lighter in volume. The unusually full supply of foreign exchange and consequent depression in rates also worked against shippers. Provisions

have been fairly active; but hog products declined materially. Cotton has been quoted lower, on a restricted business. Wool has attracted less attention, and has been quoted weaker in price. Seeds have been more freely dealt in; rough flax advancing, on moderate offerings; while Timothy receded, on augmented supplies. Hay and Straw were in fair request, especially the better qualities, which were held pretty firmly. Hops have been in very light demand, and quoted depressed and irregular in price. Tobacco and Naval stores were moderately active and steady. Groceries have been in comparatively brisk demand, and generally stronger.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions for the month ending Sept. 12th, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS. Flour, Wheat, Corn, Rye, Barley, Oats.

27 d's this m'th 1,356,000 8,312,000 5,187,000 534,000 168,000 1,689,000

27 d's last m'th 1,361,000 4,617,000 4,381,000 251,000 294,000 1,213,000

SALES. Flour, Wheat, Corn, Rye, Barley, Oats.

27 d's this m'th 1,473,000 11,916,000 8,104,000 691,000 58,000 1,936,000

27 d's last m'th 1,488,000 6,239,000 6,411,000 437,000 — 1,507,000

2. Comparison with same period at this time last year.

RECEIPTS. Flour, Wheat, Corn, Rye, Barley, Oats.

27 days 1878. 3,996,000 8,312,000 5,187,000 534,000 168,000 1,689,000

27 days 1877. 3,104,000 3,736,000 201,000 107,000 1,214,000

SALES. Flour, Wheat, Corn, Rye, Barley, Oats.

27 days 1878. 4,733,000 11,916,000 8,104,000 691,000 58,000 1,936,000

27 days 1877. 3,699,000 5,176,000 5,419,000 514,000 91,000 1,349,000

3. Exports from New York, Jan. 1, to Sept. 10.

Flour, Wheat, Corn, Rye, Barley, Oats, Peas.

78,163,557 33,753,354 20,391,801 2,853,928 1,516,207 2,560,519 309,727

77, 831,577 6,927,813 17,381,815 1,184,554 771,633 111,666 180,776

76, 1,337,000 18,679,000 11,337,000 682,000 28,100 453,250 460,290

75, 1,282,777 18,140,471 8,587,632 152,333 225 88,472 255,865

74, 1,529,415 24,462,895 15,829,000 533,050 3,820 88,996 272,105

73, 966,097 13,166,242 9,819,745 551,093 19,396 29,591 91,270

4. Stock of grain in store at New York.

Wheat, Corn, Rye, Barley, Oats, Malt.

Sept. 10, 1878. 1,162,808 1,113,458 71,886 202,774 697,668 131,841

Aug. 12, '78. 1,126,813 598,786 62,447 203,224 472,366 137,003

July 11, '78. 1,161,132 730,784 128,852 174,800 207,769 683,075

May 7, 1878. 748,196 263,020 75,299 207,576 570,298 258,327

Apr. 15, 1878. 1,370,081 541,648 106,375 396,861 857,273 253,424

Jan. 10, 1878. 2,586,715 105,909 286,333 913,898 1,687,985 321,474

Dec. 10, 1877. 2,941,982 1,721,229 399,077 864,787 1,879,032 358,849

Nov. 5, 1877. 994,374 2,643,502 166,949 368,429 1,770,739 338,388

May 7, 1877. 761,686 468,809 193,016 174,375 317,881 291,654

Jan. 8, 1877. 3,668,010 3,077,504 341,730 905,615 1,088,104 425,405

Dec. 11, 1876. 3,110,283 3,353,554 218,841 873,310 1,182,322 512,641

5. Tide-water Receipts at Albany, from opening of navigation to Sept. 7.

Flour, Wheat, Corn, Rye, Barley, Oats, Malt.

1878. 3,400 11,805,000 4,613,000 856,401 311,000 2,900,000 300,000

1877. 6,500 2,148,000 14,182,000 395,600 174,800 207,769 683,075

1876. 16,400 7,978,200 4,679,400 343,600 122,000 2,125,700 469,700

1875. 54,800 11,262,200 3,693,700 83,500 32,900 1,155,600 533,100

New York Live-Stock Markets.

WEEK ENDING Receipts. Cows, Calves, Sheep, Swine.

Aug. 19. 11,677 51 4,350 27,316 26,290

Aug. 26. 9,896 77 3,892 28,191 25,892

Sept. 2. 12,782 97 3,723 32,532 24,902

Sept. 9. 12,077 39 3,051 31,926 26,316

Total for 4 Weeks. 46,032 264 14,507 111,995 104,310

do. for prev. 4 Weeks 43,854 337 14,793 115,063 81,413

Average per Week. 11,508 66 3,627 28,479 26,007

do. do. last Month. 10,963 84 3,498 28,917 21,111

do. do. prev. Month. 10,143 54 4,202 26,234 21,690

Bees.—Trade was slow and dull at the beginning

of the month's business. Heavy receipts, unsold stock left over, and a light demand, together broke the market, and prices gave way. An improvement in the foreign export trade, with lighter receipts, helped to restore business somewhat, but it has dragged and fluctuated all through the month. At the close, low grade stock fell off fully 1/2 c. #10, but good steers advanced quite as much, and so kept up the average. The closing prices were 7 1/2 c. #10 for low grade stock of 55 lbs. to the cwt.; 7 1/2 c. to 8 1/2 c. for fair steers of 55 to 56 lbs.; 8 1/2 c. to 10 c. for prime steers of 56 lbs., and 10 c. to 11 c. for extra, estimated at 57 to 58 lbs., dressed, to the cwt. live weight.

The prices for the past four weeks were as follows:

WEEK ENDING Range. Large Sales. Aver.

Aug. 19. 6 1/2 @ 10 1/2 c. 8 @ 10 c. 8 1/2 c.

Aug. 26. 7 1/2 @ 10 1/2 c. 8 @ 10 c. 9 c.

Sept. 2. 7 1/2 @ 10 1/2 c. 8 @ 10 c. 9 c.

Sept. 9. 7 1/2 @ 10 1/2 c. 8 @ 10 c. 9 c.

Cows.—Little business has been done in cows; the

demand is light and receipts have been fully up to the wants of purchasers. At the close of our report there was more inquiry which led dealers to advance prices a few dollars per head. Sales have been made from \$35 to \$50 per head, according to quality.

Calves.—The market has been firm and active

through the month, prices closing without much change at 30 1/2 c. for grassers, 3 1/2 c. to 2 1/2 c. for buttermilk, 4 @ 1 1/2 c. for fed, and 5 @ 7 c. for veals. The pick of the lot went for 7 1/2 c. #10 live weight.

Sheep.—Fair quality sheep have been firm and in

demand: poor stock have been dull and neglected. Sheep good enough for export have brought 5 @ 5 1/2 c. #10; the range being from 4 @ 1 1/2 c. for prime stock. Lambs sold for 5 1/2 @ 5 1/2 c. #10; all live weight. Good Store Ewes from Ohio and Western Pa. sold for 4 1/2 c. #10 for 82 to 84 lbs.

Swine.—Live hogs have been steady at 4 1/2 @ 4 1/2 c.

for good; rough stock sold for 3 1/2 c. #10. City dressed active at 5 1/2 @ 6 c. #10. Light pigs in good demand at 6 c.

The Horse Market.—But little has been doing in horses. A few droves of thin rough animals have come in, and sold for an average of \$125 per head. A good work-horse, 9 years old, of 1,150 lbs., brought \$130; a fine black mare, well built, sold for \$150. Some fine French Stallions have been imported; but this business promises to fall off in the future. As with other imported stock, our home-bred animals are surpassing them, and the tide is full, to turn the other way in all probability before long. 31 light carriage-horses went from Canada through New York to Glasgow last week.

Prices of Feed.

Brans, per ton. \$18.00 @ \$20.00
Middlings, per ton. 19.00 @ 21.00
Ground Feed, per ton. 15.00 @ 21.00
Linseed-oil-cake, western, per ton. 41.00 @ 47.00
Cotton-seed-cake, per ton. 25.50 @ 40.00
Chandler's Scraps, per lb. 3 @ 4

Prices of Fertilizers.

No. 1. Periv. Guano 10 p. ct. ammonia, standard, #10. \$56.50
do. do. Lohos, do. do. 47.50
do. do. guaranteed, #10, cargo H. 56.00
do. do. rectified, per ton, 9.70 p. c. 69.00
do. do. do. do. 3.40 p. c. 51.00

Soluble Pacific Guano, #10. 45.00

Excelsior Fertilizer Works, Fine Ground Raw Bone. 55.00

Mapes' Complete Manure (Vile formula), #1, 1,000 lbs. 26.14

do. do. do. Grain and Grass, #1,000 lbs. 25.00

do. do. do. Fruit and Vine Manure. 17.50

do. do. do. Bone, strictly pure, meal. 42.00

do. do. do. do. extra fine. 40.00

do. do. do. do. fine. 40.00

do. do. do. do. medium. 36.00

do. do. do. do. dissolved. 42.00

Stockbridge Corn Manure, per acre. 20.00

do. do. do. do. do. 10.00

do. do. do. do. do. 3 1/2 @ 4 c.

do. do. do. do. do. 1 1/2 @ 2 c.

German Potash Salts (potash 12 to 15 p. c. p. ton. \$15.00 @ 18.00

Nitrate of Potash (potash 50 per cent), per lb. 2 @ 2 1/2 c.

Nitrate of Soda, per lb. 4 c. @ 1 1/2 c.

Sulphate of Ammonia (25 per cent.), per lb. 4 1/2 c. @ 65 c.

Dried Blood (ammonia 14 per cent) per ton. \$15.00 @ 50.00

Bowker's Hill and Drill Fertilizer, per ton. 45.00

Gypsum, Nova Scotia, ground, per ton. 8.00

Nitrate of Potash (95 per cent.), per lb. 9 @ 9 1/2 c.

Sulphate of Potash (potash 41 per cent) per lb. 3 1/2 @ 4 c.</

all kinds of dairy implements, designs and models of barns, milk-houses, creameries, cheese-factories, etc. The exhibition of specimens of typical dairy stock, from various herds, is under consideration, but is not yet decided upon. The Secretary reports a very favorable response from all sections of this country, and from Europe, and the prospect is good for a successful exhibition. The purpose of the fair is to stimulate this industry, and show our dairymen its immense possibilities. It is estimated that the product from the cows of the country exceeds five hundred million dollars annually. Recently in a single day 42,000 boxes of cheese were shipped to Liverpool for the European market, and the exports of butter from the U. S., during the year ending June 30th, 1878, amounted to 21,834,141 lbs., and a value of \$3,930,840; the previous year to 21,527,212 lbs., valued at \$4,421,616. Cheese for the corresponding periods amounted to 123,783,736 lbs., having a value of \$14,103,529 in 1878; and 107,364,666 lbs. in 1877, valued at \$12,700,627, which is a rapid increase, especially for butter, over previous years. Yet the trade is but partially developed. If the proposed fair shall help dairymen to appreciate this fact, and teach them how to meet the increasing demand with better products, it will result in great benefit to the industry and to the country.

A Strange Way.—A letter comes and we read: "Will you please give me the name of the enclosed fruit."—As the letter contains nothing, we propose to write to the sender that he has forgotten to inclose his specimen, but on turning over the leaf find it signed "Monmouth."—Let us sum up the result of this utterly useless custom of omitting the name in writing to an Editor. "Monmouth" wastes paper, envelop, stamp, and time occupied in writing; he has a tree of which he knows but a single one, he wishes to know the name, but carefully hides himself in "Monmouth," so that we cannot reach him. Our interest in so rare a tree is excited; we too would know what it is, but are unable to take another step. We are put to the trouble of writing this item, which the person in question will not see until October, and quite too late to repair the omission.

Cleaning and Burnishing Iron.—Mr. E. N. Jennins, of Cornwall, N. Y., an excellent horse trainer, recently showed us a contrivance in use in the Prussian army, for polishing the bits, stirrups, and other parts of the harness or trappings made of iron. It is simply a piece of hardened steel, 4 or 5 inches long, inserted in a handle, as shown in the engraving. The cross section is an oval; or, if round, it would probably do just as good work. It is made of $\frac{1}{8}$ -inch steel, with the surface smooth and polished. To brighten a tarnished or rusty



AN IRON POLISHER.

piece of iron or steel, the instrument is simply rubbed vigorously upon it, making it bright and clean in a short time. Where there are facilities for the work, an old, half-round file may be readily ground and polished to form a similar burnisher.

Invitations to Fairs, have, as usual, been received from every section by the Editors. But the number has been so large, and our work so pressing, that we have been compelled to decline all, save a few to the largest, or more representative of these exhibitions. We thank the many friends who have thus shown their interest in the *American Agriculturist*. We look upon these fairs as among the best experiences of the farmer's year; and we preach according to our practice, when we advise every farmer to attend all he can of them.

Is a Leg of Mutton a Sail?—"H. C. W.," of Westport, Ct., asks if it is "against the law to chase wild ducks in a row-boat with a 'leg-of-mutton sail,' the law prohibiting any vessel propelled by steam or sails." Now, if a "leg-of-mutton sail," is a sail, then it must be against the law to chase ducks with a boat so propelled. The important point is, whether "a leg of mutton" is a sail. The law evidently intends that no means shall be used to propel a boat, which will beat the ducks; hence, we suggest that you try the "leg-of-mutton" on the ducks, and if you catch them, to conclude it is a sail; if you do not, then keep on chasing them. Yet, the law only mentions "chasing" ducks, not catching them, so that won't work. Suppose, as a last resort, a convention of leg-of-mutton-sailors and ducks, i. e., of chasers and chased, be called to decide whether a "leg-of-mutton" is a sail. If that does not decide the point, ask us again.

Difficulty with Plums.—"O.," Homer, N. Y., has trees which bloom and set full, but an insect stings the fruit; he has tried lime and ashes with no effect; thinks that bottles of sweetened water have done some good, but he wants a "cure." It is the old story over again of the Curenlio, which we have told so many times. Yet it is still new to some. The bottles of sweet-

ened water may have caught many insects, but probably few of the guilty ones. Though innumerable experiments have been made, no application has been found to prevent the attacks of the Curenlio. Where this insect abounds, plums cannot be had, unless the trees are shaken, after the fruit sets, at first every morning, and as often thereafter as the number of insects caught shows the necessity for it. In the morning the insects are torpid; a sudden jarring of the tree will cause them to drop; they are caught upon a cloth spread for the purpose, and killed. This must be done, or no plums will ripen.

Covering Strawberries.—"C. H. S.," Sussex Co., N. J., protects his vines in winter by covering the ground between the rows with corn-stalks, bringing them close to the vines, and lays bean-poles across, to keep the stalks in place. This has long been followed in some of the Western States, and we give it now, to remind those who have not other material at hand, that corn-stalks will answer the purpose.

Surfeit in a Horse.—"P. L.," York, Pa. Horses are subject to a skin disease known as surfeit. This appears generally in the spring as small lumps, which break and exude a watery matter and then become covered with scabs. The irritation causes the animals to bite its skin or roll upon the ground, and in your case it lay and rolled in the spring to allay the itching which existed previously. This action most probably was not the origin of the disease, although a sudden chill may cause it. The treatment is to give one ounce each of sulphur and cream of tartar daily in the food for a week or ten days, repeating for another period if needed; and to wash the skin with water slightly diluted with sulphuric acid. One drachm of the acid to a pailful of water will be sufficient.

Weeds, Briars, and Brush, in Highways.

—The *N. Y. Law*, passed March 11th, 1878, reads:—§1.—It shall be the duty of every person, or corporation, owning, or occupying under a lease for one or more years, any cultivated or enclosed lands abutting upon any highway, to cause all noxious weeds, briars, and brush, growing upon said lands, within the bounds of said highway, to be cut or destroyed between the fifteenth day of June and the first day of July, and between the fifteenth day of August and the first day of September, in each and every year. But Boards of Supervisors may fix a different period, or periods, for such cutting or destruction in their respective counties. This section shall not be construed to restrict any of the powers heretofore conferred upon Boards of Supervisors. —§2.—It shall be unlawful for any person to place, or cause to be placed, any noxious weeds, or the seeds of such weeds, within the bound of any public highway. —§3.—Any willful neglect or refusal to comply with the provisions of section one of this act, or any willful violation of section two of this act, shall subject the person or corporation so offending to a penalty of ten dollars and costs in and for each road district in which any of these provisions shall be violated, to be sued for by the commissioner or commissioners of highways of the town wherein said road districts shall be situated, or by the street commissioner of villages, when such village constitutes a separate road district, and recovered before any Justice of the Peace having jurisdiction; said fine, when collected, to be paid into the highway fund of such town or village. —§4.—It shall be the duty of commissioners of highways of towns, or street commissioner of villages to prosecute every person or corporation violating any of the provisions of this act in their respective towns or villages, and to include in each annual report of such commissioners a detailed statement of all fines recovered under the provisions of this act.

Plaster on Wheat.—"A. S.," Blair Co., Pa., says we recommend certain artificial fertilizers on wheat, but that they cost too much, and asks if it would not be a good plan to sow plaster after the wheat is sown. We have advised the use of fertilizers, because, if used intelligently, they increase the crop more than enough to pay the extra cost, and thus are profitable. Plaster which is a fertilizer, may frequently help the crop somewhat, but it contains only lime and sulphuric acid, and cannot supply nitrogen, phosphoric acid, and potash, which are generally most useful to wheat, particularly the first two. Plaster is, on very many soils, very helpful to clover.

The Best Fowls for Winter Laying.—"F. G.," Fort Erie, N. Y. The Light Brahma has the best reputation for the production of eggs in the winter. It is a matter of doubt if this breed is not surpassed by the Leghorns. But the Brahma has other good points which the Leghorn has not, and this probably gives the former the advantage.

Preparing a Heifer for Exhibition.—"J. W. P.," Marshall, Texas. It is hardly possible to bring a very young animal into what is called "show condition" by feeding. If overfed it becomes sickly, poor, and miserable; its digestive organs are unable to dissolve the excess which goes into the intestines in a crude form, and causes disease. A calf of 10 weeks old can be brought into good healthy condition by feeding about 6 quarts of new milk daily in 3 meals of 2 quarts each, and giving about a pint of mixed wheat, bran, linseed, and

oatmeal between times. A little fine hay or fresh clover may be added. With this feed the animal will not become fat, but will appear sleek, lively, and healthy.

North American Ayrshire Register. Vol. III, is received from its editors, E. L. and J. N. Sturtevant, South Framingham, Mass. This is an independent Herd-book, in which every animal is traced to importation, being in opposition to that of the "regular" Herd-book of the Ayrshire Breeder's Association, which is said to be less strict in its requirements of the animals admitted for record. The N. A. A. R. has the merit, that all who refer to it may be reasonably sure of the purity of the pedigree of the animals found therein.

Cooking for Milk Cows.—"A. T.," Milltown, N. B. Whether or not it will pay to cook the feed for 30 cows, is a matter of figuring; the value of milk and the cost of labor being the chief items in the calculation. There is a saving in the quantity of food used which will go towards the cost of the apparatus and the feed. If a man can be procured at one dollar per day, and the extra milk gained will be worth more than that amount, there will be a profit in it. One man can prepare the food for 30 cows, and have half his time to spare for other work.

A Combined Latch and Hasp, affording double security, is represented in the engravings. The

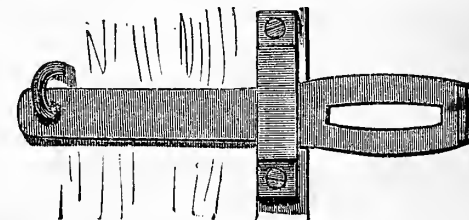


Fig. 1—A LATCH-HASP.

hasp is made to combine the convenience of the latch, by simply putting a strap over it, to hold it in place, as shown in figure 1. The staple (fig. 2) has a

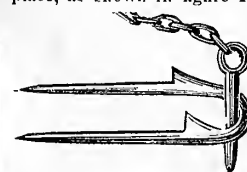


Fig. 2.—THE STAPLE-CATCH.

raised portion on each side, to catch and hold the latch. By this simple device, a door to a box-stall, or other door or gate, which it is often desired to close quickly, may be shut, and firmly fastened without delay; additional security may be obtained by slipping a pin into the curve of the staple, as seen in figure 2.

A Cheap Boat.—"R. W.," of Russellville, Ky., will find a description of a cheap boat, "suitable for fishing on mill ponds," or similar purposes, in the *American Agriculturist* for November, 1876.

Can a New Breed of Fowls be Produced?—"M. M." There is no doubt of the possibility of producing a distinct breed of fowls by selecting some good common hens and a cock, and carefully selecting and breeding the progeny closely in-and-in so long as the process is successful. The Plymouth Rocks are an instance of this, and although from a variety of bloods, the breed, in about 6 or 8 years only, has become quite fixed and reproduces itself very true to feather and character in the hands of skillful and patient breeders.

Orchard Treatment.—"B. F. H.," Fairfax, Iowa, understands exactly what he wishes to ask, and knows how to put it in the clearest possible manner. Some would cover one or two pages in order to express the following: "Is it desirable to let hogs run in an apple orchard to keep the grass down? (1)—or would sheep be better? (2)—or still better to mow? (3).—Ans. (1). Yes, they will convert the grass into manure, and by eating fallen fruit, greatly diminish the insect crop. (2). No, swine are preferable. (3). No.

Visiting Farms.—A professional duty with every good farmer, in the early fall, is to visit some of the best farms in his county or State, and take a few field lessons in agriculture. The illustrated farm journal is very good, and pays abundantly. But there is nothing like a morning's talk with a live farmer among his stock and crops to stir up one's pure mind by way of remembrance, and put him upon improvements at home. If you have been thinking for years of draining a field, go to some farmer who has a job of draining on hand, or completed, and study the process and its results. Such visits are not only a needed recreation that a busy farmer is fairly entitled to, but profitable in many ways. They give new facts, show one improved implements and new methods of culture, and help to economize labor and make money. Think twice before saying you can not afford the time. Certainly you can not afford to do without these visits.

An Honor Well Bestowed.—The French Academy of Sciences at its meeting on July 29th last, elected our friend and contributor, Prof. Asa Gray, of Harvard, a corresponding member in the botanical section. The number of correspondents in all parts of the world is limited to 100, and when a vacancy occurs through death, there is an active competition on the part of the members of the Academy to secure the honor for their friends. It should be gratifying to Americans that the choice has fallen upon our first Botanist, and the fact that he received 32 out of 40 votes gives us a high opinion of the eminent good sense of the Academicians.

Eulalia Japonica.—M. Carriere has found a mare's nest. He has discovered that the plant sold as *Eulalia Japonica* is not a type, but a variety with striped leaves, as seeds from this have given plants with green leaves; he adds, moreover, that we can be sure that it will be the same with *Eulalia Zebina*. As we were the first to describe and figure both these grasses, and never had any idea that they were "types" or anything but varieties of a plant normally green, this seems rather strange, coming from the editor of the "*Revue Horticole*," especially as he does not seem aware of the fact that *E. Japonica*, the type, is a recognized and described species (see Mem. Acad. St. Petre, 1852—Trinin's Andropogoneum, p. 333), and as recently as December, 1876, we gave the new form as "*Eulalia Japonica* var. *Zebina*." Evidently our distinguished confrere does not read his *American Agriculturist* with proper care.

How Much Wool is Produced?—The U. S. Census for 1870, reported 28,477,951 sheep, yielding 100,102,387 pounds of wool, an average of about 3 lbs. and 9 ozs. per head. There are now probably a fourth more, or between 35 and 36,000,000 sheep. Great Britain has about the same number. The total wool clip of the world for 1877 has been estimated at about $\frac{1}{4}$ billion lbs. (1,500,000,000 lbs.), or over 1 lb. for each inhabitant.

Coal Mined in the World.—For the Paris Exhibition, a statement was prepared by John Pechar, of Tepitz, Germany, from which we condense the following striking, and very interesting figures, giving the estimated total production of coal for the year, 1876, throughout the world:

	Pounds.	Tons.	Per c't.
In Great Britain	298,953,537,850	149,476,769	47.4
United States	106,588,919,613	53,294,460	16.9
Germany	106,588,919,613	53,294,460	16.9
France	37,211,516,314	18,605,758	5.9
Belgium	31,535,183,317	15,767,591	5.0
Austro-Hungary	29,643,072,318	14,821,536	4.7
All of Asia	9,174,480,000	4,587,240	1.5
Rest of the World	11,008,037,327	5,504,019	1.7
Total	630,703,666,352	315,351,833	100.0

[We reckon by the American ton of 2,000 lbs., though at the mines, and in large dealings here, a ton of coal is 2,240 lbs., the same as everywhere and for everything in Great Britain. The metric ton in France is 2,304 lbs.] It will be noted that nearly half (47.4 per cent) is mined in Great Britain; that the United States and Germany are each credited with the same amount, about one-sixth; that little Belgium nearly equals France, and yields more than three times as much as all of Asia. The annual product for all the world is about 500 lbs. for each inhabitant; for the United States, it is 2,422 lbs. for each of 44 million inhabitants.

The Iron Product of the World, for 1876, is given by Mr. Pechar (above named), as 31,571,460,276 lbs., or 15,785,730 tons of 2,000 lbs. The coal mined is about 20 times the weight of pig iron produced. The ratio of production in the leading iron producing countries is nearly as follows: Great Britain, 46; United States, 17; Germany, 34; France, 10 $\frac{1}{2}$; Belgium, 3 $\frac{1}{2}$; Russia, 3; Austro-Hungary, 2 $\frac{1}{2}$; Sweden, 24. (The iron product of the United States for 1876 (5,330,719,707 lbs.), or about 125 lbs. for every inhabitant....Of *Bessemer Steel*, the product for 1876, is stated at 4,616,873,336 lbs., or 2,323,436 tons, of which one-fourth was made in the United States, a little over one-third in Great Britain, not quite one-fifth in Germany, and one-tenth in France. The total steel made in 1876 would lay 22,116 miles of railway track, allowing 20 lbs. to the foot of rail. The present rate of production would put steel rails upon all the railways in the world in less than ten years.

Glue Scrap.—"J. L. T.," Butler Co., O. By composting glue scrap with barnyard-manure, for three to six months, an excellent fertilizer will be the result, as the material is rich in nitrogen. It is hardly comparable to stable-manure, for though it has more of the valuable ingredient, nitrogen, it contains little potash or phosphates.

Wheat Bran for use as a fertilizer, is asked about by several readers of the *American Agriculturist*. Of the essential ingredients of a fertilizer, wheat bran contains about 2 $\frac{1}{4}$ per cent of nitrogen, 1 $\frac{1}{2}$ per cent of potash, and 2 $\frac{1}{2}$ per cent of phosphoric acid, which, together,

er, give a ton of the bran a value of full \$15.00 as a fertilizer—reckoning the nitrogen at 20 cents per lb., phosphoric acid at 10 cents, and potash at 7 cents—which are the value of these ingredients in commercial fertilizers. Rye bran has about the same value for use as a fertilizer. Where bran is cheap and abundant, it is sometimes applied to the soil as a manure, and, it is said, with quite favorable results. That this is a wasteful practice, is proven by the experiments of Lawes and Gilbert, who found that the manure resulting from the feeding of a certain amount of fodder to mature animals, contained nearly as much of the fertilizing ingredients as before passing through the animal; the reason being that the processes of digestion remove for fat forming only those portions which have little value as manure. The simple lesson, then, is to feed the bran to fattening animals, thus making it serve the double purposes of producing beef, and supplying good manure.

Our Wonderful Petroleum.—Twenty years ago this article was little known. The first artificial well was sunk in August, 1859, we believe. Now there is an annual production in this country of about 15,000,000 barrels, and more than sixty million dollars' worth are exported to other countries annually—our exports ranging in importance, according to valuation, 1st, Cotton; 2d, Flour and Grain; 3d, Hog products (lard, hams, and salt pork); and 4th, Petroleum. There are more than ten thousand oil wells flowing or being sunk; and probably over one hundred millions of dollars invested in the business, in one way and another. Fifteen million barrels (40 gallons to a barrel) of this earth-yielded oil, would fill 9,600,000,000 lamps holding half a pint each, or about seven such lamps for every man, woman, and child on our globe. If these lamps were equally distributed, so that every four persons could have one, and allow half a pint of oil to burn three evenings on an average (short nights included), the 15 million barrels of oil would light up the whole human race for a period of three months, or a fourth of the population of the globe for a whole year! All this has come to light, from the bowels of the earth in less than twenty years, during which time we have not only used all the petroleum we have wanted ourselves, but have sent to other lands nearly Five Hundred Million dollars' worth, at the low Custom-house valuation. What other stores of light and of comfort, lie yet undiscovered in this wonderful world of ours!

Expenses of the United States Government since its Foundation.—Recent investigations show the total expenditures for all purposes by the United States General Government, from its foundation up to July 1, 1876, to have been \$15,516,996,680,—almost exactly half of the estimated value of real and personal property by the Census of 1870 (\$30,068,518,507). The smallest expenses were in 1793, being about $\frac{7}{8}$ million dollars; the largest in the year ending July 1, 1865, when they were 1,906 million dollars. The \$15,516,996,680, if in dollar greenbacks (24 $\frac{3}{4}$ x 7 $\frac{1}{2}$ inches, or 23 square inches each), would carpet or cover 468,000 acres, or 730 square miles, or a little over one-third of the State of Delaware, or nearly one-tenth of Massachusetts. Some of the mathematical readers of the *American Agriculturist* may reckon how many acres would be covered if the dollars were in the new silver currency, touching at their edges; also how many tons of silver it would take, at 412 $\frac{1}{2}$ grains to the dollar, and 7,000 grains to the pound avordupois; how many teams to draw it, &c., &c.

Cyprus—Its Size.—Recent treaties bring into prominence the Island of Cyprus, in the Eastern Mediterranean, which has been taken possession of by Great Britain. Its area is 3,673 square miles, or 247 square miles greater than the combined area of Delaware (2,120), and Rhode Island (1,306); or about three-fourths the size of our next smallest State, Connecticut (4,750 square miles). The population of Cyprus is about 200,000, or not two-fifths of Conn. (537,454, in 1870), and a little larger than that of Florida (187,748, in 1870). It is nearly 100 miles west from the coast of Syria, and 300 miles from the entrance to the Suez Canal. The name Cyprus is from the Greek word *cuprum* (copper), so named from the ancient copper mines on the island.

Cistern without Stone or Brick.—"B. K. W.," Bay St. Louis, Miss. A cistern often may be constructed in the ground where the earth is clay, provided the inside is plastered with hydraulic cement; though of course such a cistern would not last so long as one made of stone or brick. At several places in the vicinity of New York most of the cisterns have no brick walls, but a heavy coat of hydraulic cement mortar is put directly upon the compact earth at the sides and on the bottom. The top is covered two feet below the surface, with locust poles and flat stones, leaving a man-hole at the center carried up by planks a little above the ground. They are often arched over with bricks when the soil is compact enough to support the arch, and many soils will

do this. The top of the cistern is made wider, three feet down, a coat of cement mortar put on—with flat stones if plentiful—and the brick convex arch stands upon this.

Pennsylvania Corn.—"J. C. P.," N. Orleans, La. The variety of corn grown in Pennsylvania having 32 rows upon the ear, is the Gourd Seed Corn. It is usually planted in hills 4 feet apart, sometimes more; 2 stalks are left in the hill, and generally but one ear or one large and one small one are produced upon each stalk. The stalks are not so large as those of the Southern or Western corn. Good farmers in Pennsylvania grow from 80 to 100 bushels of this corn to the acre. The manner of cultivation is to plow under a very heavy sod well top-dressed with barn-yard manure, and to use 300 lbs. of superphosphate per acre besides.

Abortive Ears in Corn.—"D.," We do not yet know the possibilities of the corn-plant. Five fair sized ears to a stalk is not uncommon. We are trying this year to grow more ears by extra fertilizing and pruning. There is no doubt that if the soil is made sufficiently rich, and the plants have room enough, and if they are trained to it by continued skillful selection, pruning, and cultivation, every abortive ear can be made productive. This can only be accomplished by long and patient work; it can not be done by a spurt or accident. The removal of abortive ears, and suckers, will doubtless throw more strength into the others. You may experiment hopefully in this direction.

Gilt-edged Butter.—"G. E. R.," and others. We can not give the names of any persons purchasing gilt-edged butter. The number of customers for butter at a dollar per pound, is very limited, and we doubt if those persons who sell butter at very high prices make a corresponding profit, considering the expenses incurred. Probably the best way to get good prices would be to put up first-class butter in neat packages, marked with the maker's name, and sell it through a commission agent for a time until a reputation is gained, and then gradually work into such a connection as may be deserved. No extra price can be procured except for a stated supply at all seasons, and of an unvaryingly good quality.

Cows Eating Wood, Bones, etc.—"C. M. F.," Trenton, N. J. When cattle eat bones, leather, wood, etc., it indicates a lack of phosphate of lime in their food, which they require to supply bone material and wastes of the system, and the 100 lbs. or more which every cow requires in a year for her milk. Lack of this in the food, creates a morbid appetite, which is only partially satisfied by gnawing at such objects. Bone flour may be fed in its grain to each animal at the rate of a teaspoonful per day. A good dressing of superphosphate or bone-meal on the upland pastures, will stimulate the growth of such plants as furnish the missing ingredients.

Okra Soup.—"Mrs. J. J.," Clark Co., Va., referring to a note upon the uses of Okra, in August *American Agriculturist*, says that when the sliced Okra is added to the soup: "The mucilage in the young pods will create a foam that is almost impossible to keep under control. To obviate this, slice the pods into sufficient water to cover them; in an hour or more, squeeze out with the hands into a skillet or shallow pan containing a very little lard, and fry until the gummy matter is killed. A little observation will soon determine that fact. Be careful not to brown or scorch. Turn the fried Okra into the soup kettle and let it boil at least an hour in the soup, as it should be perfectly soft when served. Add a generous amount of tomatoes to the soup, as they are a decided improvement, and "Okra Soup," according to Southern usage, should be quite thick. As in all vegetable soups, I think it an advantage not to have the stock too rich. When made with chicken as a basis, a small piece of ham or bacon improves the flavor. In using the dried "Okra" soak several hours in tepid water, and then fry as directed for the green. It requires more boiling in the soup than the fresh, and, although not so finely flavored, still is a valuable addition to our winter soup vegetables."

"Compulsory Education."—To "Individual Rights." It is out of the scope of the *American Agriculturist* to discuss with you the "injustice of compelling education arbitrarily," but here is a thought or two. No parent has a right to send into the community a child with an infectious disease, or one viciously inclined. The State has to take care of such cases for the protection of the people at large. Ignorance is the parent of vice. The foundation of power, of civil rights, is with the mass of citizens. Education refines the feelings, strengthens the moral powers, enables one to think and judge better, improves the understanding, and makes a better citizen. Is it not the duty of the State to require what will lessen its care and expense for the vicious; to compel an education that will improve its own condition, its source of power, its safety from crime and revolution?

While this education may and should be left mainly to the parent, if the parent neglects to give it to the child through ignorance, or carelessness, or inability, should not the State provide and compel it—not only for its own protection, safety, and best good, but in justice to the child itself? It seems to us that every child should have a knowledge extending to Reading, Writing, Arithmetic, Geography, and the History of our own country. Prussia adds to these requirements, and well, we think, Drawing, Music, and Gymnastics. It takes care that every child has these acquisitions from the parent if they will and can supply them; otherwise the State furnishes them, and sees to it that they are obtained by every child not an invalid or idiot.

The New York State Fair, held at Elmira, Sept. 9-13, was, taken as a whole, as good an agricultural fair as we ever attended, and it was said to quite equal any ever held by this leading Society. A marked feature of these exhibitions is the absence of horse trotting, and the fact that nearly a fourth more money is offered in premiums for cattle than for horses. The large attendance upon, and general success of the exhibitions of this Society, is a conclusive argument in favor of fairs without the "agricultural horse trot." The show of farm machines was especially full and varied; among these we recognized many well tried implements, as well as some new ones. The horticultural department was creditable to the locality, though naturally smaller than usually seen at Rochester; the specimens of fruit and flowers on the stands were excellent of their kinds. In the stock departments, the show of stallions was the finest the Society has ever had, and the cattle and sheep exhibit was superior, particularly the latter—not so much in numbers, as for excellence and variety. An interesting feature was the three Grange wagons, which vied with each other in showing the products of the farm, in field, stable, and household. These were great platforms on wheels, about 30 feet long, by 8 feet wide, with standards and shelves erected to hold the fruits and vegetables and other decorations of grasses, grains, etc. One wagon had open cupboards in the sides, showing viands for the farmer's table, and outside of the wheels, under the edge of the platform, were compartments containing a calf, a sheep, pigs, and the several kinds of poultry. As these gaily decorated vehicles moved along the track, they might have been taken for a procession of the olden time in honor of Ceres and Pomona. The success of this Society is largely due to the energetic and disinterested efforts of Secretary Harrison and the other officers, to whose kind attentions as well as those of the editors of the "Husbandman," which so well represents the farmers of that section, are we indebted for much of the pleasure of our visit.

Basket Items continued on page 393.

Sundry Humbugs.



If any of our readers have noticed that this column shows a certain amount of repetition, they have discovered that of which we are well aware, but can not readily avoid. It seems to make no difference how plainly we may warn people against a certain scheme. There are many who do not seem to notice what is said, and we are constantly in receipt of letters asking about the very thing that we have exposed in full but a few months before: hence we must either repeat our warning, or appear to disregard a large number of earnest inquirers. Some humbugs are so persistent, and so

often asked about, that we have sometimes thought it might be well if we were to keep certain lines standing in large type; they would read something like this:

FARMERS, BEWARE HOW YOU BECOME AGENTS.
FARMERS, BE CAREFUL WHAT YOU SIGN.
ALL LOTTERIES ARE FRAUDS.
LET ALL WALL STREET SCHEMES ALONE.
BEWARE OF ADJUSTERS OF CLAIMS.
DON'T INVEST IN ANY SECRET SERVICE COMPANY.
IF YOU ARE TOLD THAT YOU HAVE DRAWN AN "ART" PICTURE, DON'T SEND FOR IT.

IF YOU READ THE ADVERTISEMENT OF A DOCTOR, DO NOT ASK US ABOUT HIM, ETC., ETC.

We have given special and minute attention to these very matters again and again—yet, here is a pile of letters asking about these very things, and others, as if they were fresh, and had turned up now for the first time....

Will our readers please understand that we can not make exceptions. For example, we feel sure that there is no more risky business, for even those who understand it, or think they do, than speculating on the stock market, an opinion with which every solid business man will agree. When we warn our readers against

WALL STREET SCHEMES,

we mean *all*, of every kind and stripe. Some who send out circulars have much skill in "the art of putting things," and they show very plainly—on paper—that an investment must pay. Those who receive these circulars are captivated by their plausibility, but, being cautious, they write to ask if we do not except so and so from our general warning. It is some trouble to write a brief negative reply, yet we do this, rather than to appear impolite. It would save the writers, as well as ourselves, both time and trouble, if they would accept, once for all, the statement that we can make *no exceptions*; it is not a question altogether of the persons concerned in it, though some of these are "shaky"—but the nature of the business is such that all engaged in it are looked upon with suspicion. If the cashier or bookkeeper of any business house of high standing, or in any bank, were known to be "dabbling in stocks," he would lose his place. When a "breach of trust," or "defalcation," or other sugar-coated form of robbery takes place, the first question concerning the defaulter is, "Did he operate on the street?"—And it is oftener than otherwise found that this form of gambling is responsible for the ruin of these persons.... The same may be said of

ADVERTISING DOCTORS.

As we would not employ a physician who advertises his cures and sets forth his own ability, we warn others against such, as we regard them unsafe. Yet the number of letters asking if we include this person, or will not except that one, is very large. We wish we could save others and ourselves the trouble of writing, by stating so distinctly and emphatically, that it would suffice for some months, that *we make no exceptions*.... Here is a droll way of exposing a fraud. A person in Tennessee thinks that parties who are advertising some wonderful seeds are injuring the public and also the reputation of the town; he cites the names of several persons who will give evidence that the seed is a fraud, and then

DOES NOT SIGN HIS OWN NAME!

This is a new illustration of the story of the cat and the chestnuts.... The special agents of the P. O. Department are doing much more to protect the public than appears on the surface; their great difficulty is, that the law is so defective that smart swindlers can evade it, and carry on their business while they laugh at the officers; all that they can do in such cases is to expose those rascals which the law will not reach. Mr. B. H. Camp, the special agent at Pittsburg, Pa., sends us an account of the doings of a person calling himself an agent of

M. M. HOWARD & CO.,

who profess to be manufacturers of oils, gasoline, naphtha, axle and car-grease, at Pittsburgh. The chap pretends to take orders for the articles named, at much less than the market rates, and then from this makes a very liberal discount for cash in advance. The swindler has been operating largely in Minnesota, Dakota Terr., and Missouri; when last heard from, he was in Atchison Co., Mo. "M. M. Howard & Co." are like Sairey Gamps' Mrs. Harris—

"THERE AINT NO SUCH PUSSON."

That a swindler should try to operate in this manner, is not strange, but that he should find any one who could be tempted by unusually low prices—the very thing that should excite suspicion—to giving him cash in advance, is certainly surprising. The matter was exposed by the numerous letters for M. M. Howard & Co., received at the Pittsburg P. O.; these proved to be complaints that their "agent" had been paid cash in advance, and the goods had not been received, and are evidence of a lack of business caution that the old woman who keeps a peanut stand on a New York street would not be guilty of. The only remedy in such cases has been administered by this "agent".... Divining rods have been used to find water and mineral veins, and, strange to say, there are people who believe in their efficacy. [N. B.—Do not write us to tell of cases in which the rod has worked. We will not discuss the influence of the moon, the change of wheat into chess, the efficacy of the 7th son of the 7th son, animal magnetism, spiritualism, or divining rods.] But these are outdone by a chap in Massachusetts, who uses the rods to find

VEINS OF ELECTRICITY.

He claims that he can tell where the lightning-rods should be placed to insure protection. Nothing but a want of knowledge of the laws of electricity can induce any to believe in this nonsense. Electricity is a good thing for the medical quacks. "Doct." Campbell,

THE "VITAPATHIC" MAN

of Cincinnati, has got hold of it, and for once electricity

has got the worst of it; he beats Ajax, Bootjaks, or any of those "old ancients," who had a time with lightning. He sells electric machines, and the stuff that they grind out is none of your common kind of lightning; we have heard of "greased lightning," but this beats that. What its different currents will do when applied separately, is remarkable, but "its double compound, vital attentive current," is the current for our currency. Just see what this double, compound, back-action, reciprocating, self-sustaining current will do, when it fairly gets at it. "This current passing through in a proper manner will vitalize all medicines, and all vegetable, animal, and human forms [according to this, the human is not an animal form!]; will cure diseases, restore life, and prevent death." It would be comforting like, if we could honestly stop there, but fairness compels us to give the rest—"even after all other applications of electricity have failed"—"most lame and impotent conclusion."—But what is this electric talk to another treatise by the same "Doctor," which is nothing less than "Introduction to

A LESSON ON OCCULT SCIENCE,

previous to teaching the Full Power." Here we learn that "there is a hidden power in Nature, invincible and sublime." A high old power it is, for besides being variously seen and heard, it is "felt in the balmy air, in the mineral magnet, in the perfuming vegetable, in the electric eel, in the charming serpent, in the magnetic man, and in the fascinating woman." This shows that it is a power worth having, and there are some seven pages more of the same sort; as a power it knocks Corliss' Centennial engine out of sight, for do we not read: "This newly discovered power is stronger than steam, swifter than electricity, and more subtle than magnetism. It is the power of all powers, and the power from which all other powers derive their power." "Occult science"—we should say so! Recollect that this is merely an "introduction, previous to teaching the Full Power." Let us be thankful that the "pow-wow" ends before we get to the "full power.".... After dealing with the occult sciences, after being on familiar terms with electricity and "vitapathy" and things, and having had a glimpse at that powerful "power," it is rather a relief to come from this exalted humbuggery down to the real

OLD FASHIONED QUACK MEDICINE,

that doesn't go poking among the stars and the lightnings, but is of the earth, earthy, one of the real old sort, which shows that the pattern is not lost, but that what has been, shall be, so long as there are people who will believe nonsense, and have dollars to pay for trash. What is a quack medicine without the story of its origin, and what is the use of a story, unless it is both pathetic and absurd? The stuff it is

"LU-CU-PI-A,"

which is not so bad, as a name. The circular is a model in its way, small, but comprehensive—a solid chunk, and so satisfying! The hand of the master is visible in the very first line, which reads, "The King of Terror Baffled!"—He has been that so much, that we should suppose that had become chronic, and his majesty used to it by this time. The next line is "Lu-cu-pi-a." Then follows the portrait of a young lady who—but we anticipate: the graven picture is nothing to the word painting that comes presently. Under the picture is, "Take, and Live."—We admit that this is a little puzzling at the start, whether "Lucenia" is the name of the young lady, and she is to be taken for "better and for worse," or whether Lucenia is to be taken, that we may live and baffle the K. O. T., are points that we look to the history to clear up. The history begins: "In one of the New England States there lives a family"—One of the essential qualities of history is truthfulness, and here we have it. "One member of his family was a lady,"—as often happens in the New England States, but such a lady, "with a sweet, tender face, with dark-glowing eyes (ah!), with coral-tinted lips (oh!), with rosy-tinted cheeks (m!) and amber curls" (whe!) The possessor of these could be no common sort of a lady, and we are not surprised to read that: "She was as graceful as a gazelle, as light hearted as a bird, and as spirited as an antelope"—a sort of menagerie, or great moral show kind of a girl, you see! Notwithstanding all this, the lady "took sick"—that isn't exactly the way it is told in the circular; that says: "But, as frost destroys the fairest flower, so does disease the most perfect woman." Sick she was, "Affliction sore, long time she bore, physicians was in vain"—of course, they always are in these histories, and of course she was given up; then Ada (not an appropriate name, as they couldn't aid her), she went and

"DREAMT A DREAM."

Of course she did it three times running—it always takes three times. To make matters short, in this dream she saw an herb—she never saw it before—Charlie must take her out botanizing, Charlie refuses—girl will go—will die otherwise—Charlie yields—she goes—stream—trees death seemed near—"one wild cry of joy"—"There,

there Charlie, there is Lucipia."—We know the rest—herb gathered—stuff made—Ada took—"and nature lived and coursed through her veins triumphant." *Moral*.—Go thou and do likewise. "Price, \$1.00 per bottle, six bottles, \$5.00." Ada, you are welcomed as a bright star in the constellation in which Old Mother Noble, Eddie Eastman, Thee and Thou Severalbarks, Pilindias Unoka, and the rest are shining lights.

Moths in Furniture—Important.

Taken as a whole, throughout the country, house-keepers suffer more annoyance and destruction of furniture, carpets, and woollen garments by *moths*, than from any other pest. The little red ant is a great nuisance in some localities, but it is not destructive and not very prevalent. Moths are universal, and whole sets of costly upholstered furniture fade away, losing their beauty and substance, even after days, weeks, and months of watching, beating, and picking, with painstaking care. Lately, establishments have been opened in leading cities to kill moths. First it was done by removing the upholstery from the wood and thoroughly *baking* it. More recently liquid preparations have been used. But the necessity of transporting furniture to these establishments, and the large expense, have been serious obstacles. Some parties advertised to sell a moth-killing secret for a certain sum of money.—We are happy in being able to announce to the readers of the *American Agriculturist* an easy, simple process, that we have tried the past season, with what appears to be a complete success. (We mentioned it to a furniture dealer and repairer to-day, and he said he had practised it for some time, and that it was a sort of "trade secret.")

The Process.—A set of furniture that seemed to be alive with the larvae, from the month it came new, and from which hundreds of these pests had been picked, and brushed, was set into a room by itself. Three gallons of benzine were purchased, at 30c. a gallon, retail. Using a small watering pot, with a fine rose sprinkler, the whole upholstery was saturated through and through with the benzine. *Result*: Every moth, larva, and egg, was killed. The benzine dried out in a few hours, and its entire odor disappeared in three or four days. Not the slightest harm happened to the varnish, or wood, or fabrics, or hair stuffing. That was months ago, and not a sign of a moth has since appeared. The carpets were also well sprinkled all round the sides of the rooms with equally good effect. To have known this two years ago, would have been worth at least \$50.00 in the saving to a single set of furniture, and would have saved many days of most annoying labor. If this is not worth, to multitudes of housekeepers, many times the cost of the *American Agriculturist*, we shall be greatly mistaken.—For furs, flannels, indeed all woollen articles containing moths, benzine is most valuable. Put them in a box, sprinkle them with benzine, close the box tightly, and in a day or two the pests will be exterminated, and the benzine will all evaporate on opening.

CAUTION.—Benzine, in fluid or vapor form, is very inflammable; therefore, when using it, have no fire or burning light in the room—not even a match on the floor to be trod on. With this precaution it is safe. With the windows open its odor even will soon disappear.

Some Bee Notes for October.

BY L. C. ROOT, MOHAWK, N. Y.

WINTERING BEES.

I am frequently asked which method of wintering I prefer—out-of-doors, or within doors. My readers of three years past know my preference for in-door wintering, when done under suitable circumstances. If without a properly arranged, dry room, better leave the bees on their summer stands for the winter, as they will ordinarily do much better than when unsuitably packed within doors. General directions for in-door wintering may be found in the *American Agriculturist* for October, 1875. To prepare bees for out-door wintering, each hive should contain at least 25 lbs. of honey at this date. About one-third of the way from the top, and midway between the ends, a $\frac{1}{2}$ -inch hole should be made through each comb, to allow the bees to pass through freely. They often starve in very cold weather, even with plenty of honey in the combs, for the want of these passages; extreme cold preventing them from leaving the cluster, and passing around the edges of the combs to get the honey. The honey-board of each hive should be removed, and a quilt placed over the top of the frames. These quilts should be made of a size to fit the top of the hive, of heavy unbleached muslin, with about half of a roll of cotton batting, and tied closely enough together with stout twine to keep the cotton properly in place. The cap of each hive should be packed closely with chaff or cut straw, and a piece of hurlap tacked on to keep the straw from scattering when it is put in place.

Make a hole in the top edge of the cap, to allow the moisture to escape. If the New Quinby, or any side-boxing hive is used, the space at both sides and top may be thus packed. If hives are not well protected from wind, set posts and make a tight board fence around the apiary. The hive should face the warmest direction; finish the fence on that side later in the season, when the bees fly less freely. Set the posts before the ground is frozen, and finish the fence when desired.

ARTIFICIAL COMB FOUNDATION.

What is it?—and how can it be used successfully?—The base of the cells and a beginning for the walls, is formed by passing sheets of pure beeswax between two rolls. It is one of the leading inventions of the day in our line, and will prove a valuable aid to bee-keepers. I will soon give a full description of the mode of manufacturing, and indicate some of the important ends to be gained by its use.—In consequence of the moderate yield of fall honey, the amount last taken from the hive, of which a record has been kept, was only 10 lbs.

Do bees gather honey from the Ailanthus, and is it poisonous?—I have never lived in sections where this tree was common, and am wholly unfamiliar with it. I do not recall any mention of it by writers on bees.—[Any information on this point will be acceptable.—Eds.]

W. A. Dean, Minn., is referred to the January number, 1876, of the *American Agriculturist*, for directions concerning the New Quinby Hive, and to the October number, 1875, for suggestions about in-door wintering.

Brass Milk Cans—Water Fences.

A young lady reader, who has traveled in many lands, but now lives on a fine farm, loves the country, and is observant of rural things, sends us the following:—I was quite interested in the engraving in the September number representing the "Flemish Milk Wagon," for it brought to mind many little facts in connection with the dairywomen of Holland and Belgium—some of which may be of interest to your readers. The whole "turn-out" is peculiar, as the picture shows, but it does not indicate how much the cans differ from any used in this country. They are all of brass, and shine as if their owners had but just ceased polishing them. A ride in the cars through the rich pasturing districts, presents many new features. As we look on either side for miles over the level country, the gates which are set here and there cause one to wonder how the cattle can be kept in a pasture with only a gate for a boundary. But the fact is, these fields are fenced with a ditch of water some six or eight feet wide, so that a gate on the slight plank bridges which lead from one field to another, is all the protection that is necessary. Much of the land being below the level of the sea at high tide, there is never any scarcity of water with which to make the water fences. As early as four o'clock in the afternoon, women can be seen going out in boats to the pastures through these small canals. The brass milk can stands in the stern of the boat, and is filled from the pail which the woman uses when milking the cows. There are scarcely any trees in these pastures, which, however, is not such a lack in that country as we should consider it here, as the climate is mild and moist on account of the close proximity of the ocean. [In traveling through Holland, we noticed that in many places there were no gates even. The short bridges alluded to by our correspondent were arranged to slide off, or perhaps more frequently to raise up. So, to "close the gate," they simply elevated one end of the bridge, sometimes two or three feet, and sometimes they stood perpendicular. Some were held up by a cord or rope attached to a stake; others were supported erect by an upright post that lay upon the ground when the bridge stood on end. On the west coast of Holland, subject to cold winds from the ocean, most of the cows in the fields, even in July, were covered with a sort of blanket jacket, extending from the shoulders or neck to the flanks. Many of these were in variegated colors, and were quite ornamental.—Ed.]

Tell Us About Your Wheat.

The wheat questions in the September number (page 334), have called forth many responses, which contain so much of interest, and we consider the subject of so great importance, that we are desirous of obtaining data from as many wheat growers as possible, in order that the results may be of the greatest benefit to our readers. If every wheat-growing reader of the *American Agriculturist* would reply to these questions, we could present such an array of facts that each one would be many times repaid for his trouble, in being able to compare his own experience with that of hundreds of others from widely scattered localities. All of

the questions may easily be answered on a postal card by writing the replies opposite the respective numbers, as in the following transcript of one of the replies received:

(1.) Don't sow any.—(2.) Hard Scotch Fife.—(3.) Black loam, clay subsoil.—(4.) Burnt straw.—(5.) Scatter straw when we thrash.—(6.) $1\frac{1}{2}$ bushels.—(7.) 15 bushels on the average.—(8.) Think not.—(9.) Never.—(10.) April, or as soon as possible in spring.—(11.) 75 cents to \$1. (Signed,) HENRY ARMSTRONG, LORISTON P. O., CHIPPEWA Co., Minn., western part of State, on St. Paul & P. R. R. Send on the postal cards, the more the better.

Steam Power for Farm Use.

On many farms, steam as a motive power is now considered indispensable, and its rapidly increasing use for farm purposes is a striking sign of agricultural progress. Many large farms of the West

would be almost as much at fault without steam, as a back country saw-mill without water. The multiplicity of uses to which steam power can be applied on a farm, is hardly appreciated, save by those who have had experience. The proper "agricultural engine" is mounted on wheels, that it may be moved from one part of the farm to another, and the greater number of purposes to which it may be applied, the more valuable it will be. Such an engine may be used for running a threshing machine

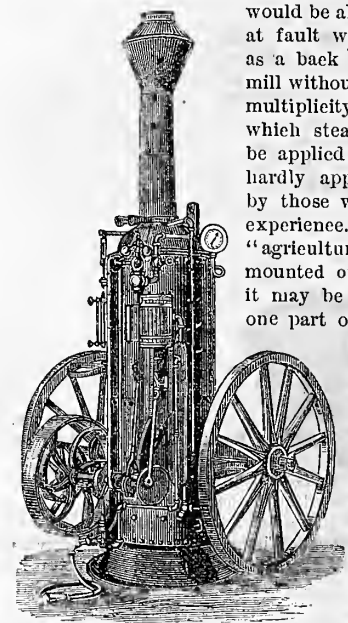


Fig. 1.—ENGINE IN POSITION.

in the field or at the barn, or a portable saw-mill in the woods, for turning a grist-mill, or for ginning cotton. When placed in position at the barn, its power may be utilized for baling hay, running a hay fork, cutting fodder, sawing wood, pumping water, winnowing grain, shelling corn, etc.; while its steam may be utilized, if desired, for steaming fodder, or cooking food for swine. By connection with the dairy, it may run the churn, and the steam warm the milk room, or even be used for heating milk. A year ago we illustrated several excellent engines used for these purposes; the one now presented is a portable machine, made at the Pennsylvania Agricultural Works, York, Pa. It differs from some others in its vertical tubular

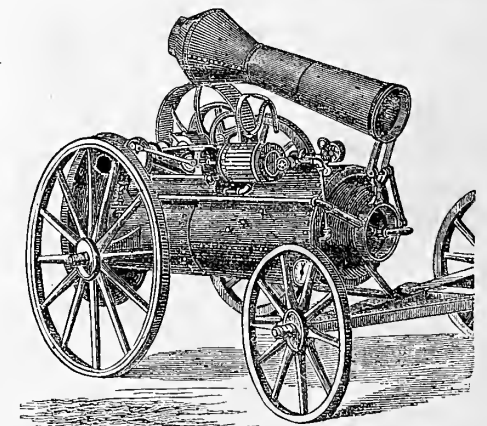


Fig. 2.—ON WHEELS READY FOR MOVING.

boiler; figure 1 represents it in position for use, and figure 2 shows the engine mounted on wheels, for transportation. The wheels shown in figure 1 are on an axle made fast to the boiler, and are useful in placing it in position; any farm truck may be used for forward wheels. In common with

other wares of the manufacturers, this engine has a good reputation among those who have used it; is substantial, compact, economical of fuel, easy running, and sold at a reasonable price. It is claimed for this vertical engine, that it is much cheaper than a mounted horizontal engine of the same power, while nearly equal in essential particulars.

Our Country Financially.

Important and Interesting Figures.

At the Minnesota State Fair at St. Paul, the President of the United States was present on Sept. 5th, and addressed an immense throng of visitors, dwelling mainly upon the material interests of our country. We epitomize from the address a few figures, which show the wonderful recuperation that has taken place even during these past five years of financial distress and enforced economy. These figures refer to the operations of the General Government. During the same time, by the economy in the expenses of individuals and families, in living, clothing, etc., the reduction of private debts, and the accumulations in savings' banks, in Government and other bonds now held by our people instead of by foreigners, there has been going on a very great addition to the real wealth of the whole country, which will be shown in its magnitude by the census of 1880. But to the figures:

	Aug. 1865.	Aug. 1878.
Total Interest bearing debt of the U. S. Government..	\$2,381,530,295	\$1,809,677,900
Decrease.....		\$571,852,395.
Annual interest paid.....	150,977,698	95,181,007
Annual Saving.....		\$55,796,691.

(This annual saving, if put on interest each year, as a sinking fund, would in 24 years pay off the National Debt.)

Total taxes paid in the form of Customs and Internal Revenue taxes:
In 1865.....\$488,273,465.—In 1878.....\$240,753,305.
Reduction.....\$247,521,160.—(more than half.)

Total expenditures, including pensions and interest:
1867: \$357,542,675; 1873: \$290,345,245; 1878: 236,964,327.
Reduct'n '67-73, \$120,578,348—Reduct'n '73-8, \$53,350,918.

Total Paper Currency Circulation, including Greenbacks, National Bank notes, and Fractional Currency:
In 1865.....\$735,719,266.—In 1873—\$687,743,169.
Value in gold.....509,999,595.....684,000,040.
Greenbacks worth, about.....694 cents, gold.....994 cents

EXPORTS AND IMPORTS.

The excess of Imports over Exports, from 1863 to 1873, ranged from \$39,000,000 to \$182,000,000. On the contrary, during the past three years, ending July 1, the exports have exceeded the imports as follows:

1876, \$79,648,481; 1877, \$151,152,091; 1878, \$257,832,667.

Total excess of exports over imports, (not including gold and silver, of which we have sent abroad large amounts produced here), for three years: \$488,628,242.

The exports of Agricultural products for the year ending July 1, 1868, were \$319,904,531.—For the year ending July 1, 1878, they were \$592,478,813. Difference between now and then, \$273,474,282.

Of Farm Products, and Petroleum, the exports for two separate years, ten years apart, are interesting:

Year ending June 30,	1868	1878
Breadstuffs, (grain, flour, etc.)...	\$68,990,937	\$181,774,507
Provisions, (meat, but'r, ch'e, etc)	30,278,253	123,549,986
Petroleum.....	21,810,676	46,574,976
Cotton, manufactured.....	4,871,054	11,435,628
Leather.....	1,414,372	8,077,659
Live Animals.....	733,395	5,844,653
Oil Cake.....	2,913,448	5,095,163
Agricultural Implements.....	673,381	2,575,193
Fruit.....	406,512	1,376,969

The balance of trade against us from 1869 to 1873, was over \$110,000,000 a year. During the past three years, it has been in our favor over \$160,000,000 a year, and in the past year, over \$257,000,000, exclusive of specie.

House Your Poultry Early.

BY I. K. FELCH.

The change from summer to fall, with its warm days and cold nights, has its influence upon poultry. There is a distemper called "snuffles" that every chick has as it matures into a cockerel or pullet, though it is often unnoticed, and for want of treatment results in roup, when it becomes contagious, and disaster and death to the flock follows. If the young chicks are taught to occupy the fowl houses before October, no very serious trouble results.

Symptoms of the Distemper.—Listlessness; face and comb quite red, and a puff or fullness of the face under the eye; the second day a white froth in the corner of the eye; a decided loss of appetite.

Treatment.—If taken in hand before the appearance of the froth in the eye, it will usually only be necessary to wash the head and beak clean, and blow down through the nose into the throat, either with the mouth, or by means of a rubber nipple, thus clearing the tear tube; and bathe the head and wash the throat with a solution of carbolic acid—one part acid to ten parts water. The birds should be kept in a quiet place and allowed nothing but water. The third day they will be quite well.

In aggravated cases when the eyes and face are much swollen, the head and throat should be thoroughly steamed by the use of a large sponge and hot water. The tear tube should be cleared (as above), a desert-spoonful of castor oil given, and bathing the face and throat with the carbolic acid solution, continued at short intervals.

This distemper may be called a cold, or the incipient stages of roup. In our opinion it is no more roup than a cold is measles. There is no offensive smell to the breath as in roup, but if neglected it will induce that disease. The breeder has the choice of adopting the adage, "A stitch in time saves nine," or by neglecting it, have that scourge of a poultry house, "roup," to contend with. Be sure your fowls are in winter quarters before the frosty nights of October, and this, with other drawbacks to success, will be avoided.

Talks on Farm Crops.—No. 20.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

There is much talk and not a little enthusiasm in regard to the use of artificial manures for wheat. "You can see to the very drill how far the phosphates were sown," is an oft reiterated remark. "I put a mark on the fence," said one of my neighbors, "but there was no need of that. A blind man could see how far the manure went."

"Yes," said the Deacon, "and they say clover shows just as plainly the effects of the phosphates."

"You mean," said I, "that when wheat is dressed with superphosphate and seeded down with clover and timothy, the phosphates not only benefit the wheat, but give a better crop of clover afterwards. This is precisely what I should expect. And if the clover is plowed under, or pastured, or if made into hay, and the manure saved and applied, artificial fertilizers will greatly enhance the permanent value and productiveness of the farm."

The Deacon is a new convert to the use of artificial manures, and is acting as agent for their sale. Possibly the commission has something to do with his conversion. He was walking over my field of mangels yesterday. We have been very short of men, and have had great difficulty in keeping the crops clean. Still, my mangels never looked better. When we had walked about half across of the lot, the Deacon stopped and wanted to know if I had been using any phosphates. "Why do you ask?" said I.—"Up to this row," he replied, "the mangels are not nearly so good as on the rest of the field. On this portion there are many vacancies, and I see you have set out cabbages to fill up the gaps."

"Yes," said I, "we set out over 20,000 cabbage plants, and I think 99 per cent of them lived and have done well. It is not nearly so much work as one would suppose, and the ewes and lambs next spring will be very grateful for them."

"You had better have drilled in phosphates on the whole lot," said the Deacon, "and thus saved the necessity for cabbages. Up to this row you have seven acres of mangels that completely cover the ground, and not a thousand cabbages on the lot, while on the remaining seven acres, the mangels, while perhaps as large, are not so even and regular. You did not sow any phosphates on this half?"

"No," said I, "there were no phosphates sown here, nor on the other half. There is no difference in the land or in the seed or manure. There is only one reason for the difference. The land was a

clover sod last year, which was a very poor catch. We plowed up the north half and sowed corn-fodder, pasturing the south side and plowing it early in the fall. This spring the whole field was plowed, and 8 or 10 tons per acre of well rotted manure spread on the furrows. It was then harrowed with a Thomas' smoothing harrow to break up the lumps of manure; and afterwards with a heavy three-horse harrow to work in the manure. It was then plowed again, rolled, and harrowed. And the heavier portions were cultivated with a two-horse cultivator, from which we took out every other tooth and then let it run as deep as two good horses could pull it. This mixed the manure still more completely with the soil and brought more lumps of hard soil to the surface. These were again rolled and harrowed, and the land, as far we had gone, was ready for the seed. We marked out the land, north and south, into rows of 2 feet 5 inches apart, drilled in the seed, and followed with a two-horse roller. When we had sown half the field, I concluded that seven acres was about as much as we should be able to hoe before the plants got too big. Mangels are sometimes slow in coming up; not so the weeds. As soon as we can distinguish the rows, we go through with a horse hoe, I follow with the hand hoes, singling out the plants a foot or fifteen inches apart, and at the same time, cutting up all the weeds. It is very important that this work should be done promptly. A few days delay not only checks the mangel plants, but adds greatly to the labor. Weeds are like fire. It is an easy matter to put out a fire just as it starts, and it is much easier to keep the weeds down just as they are starting to grow, than after they get possession of the soil."

"We all know that," said the Deacon.—"True," said I, "but we are very apt to forget it every spring. I have been caught more than once, and a singed cat dreads the fire." I did not want to put in all my mangels at the same time, because I knew we had not force enough to hoe them all at once. After we had drilled in the seven acres, I thought we had better wait a few days before sowing the remainder of the piece, and as we had time I concluded to give the land an extra plowing. And that is the only reason why the mangels are so much better on this half of the lot, than on the other half. That extra plowing was worth \$10 or \$15 an acre."

If I had to commence farming again, I would use the plow more freely. A German neighbor, whom I have alluded to, as one of the best and most energetic, and successful farmers in the town, planted eight or ten acres of early potatoes last spring. Just as they were coming up we had a severe frost, and the plants were more or less injured. Still he cultivated and hoed them and they finally grew vigorously, and looked quite promising. But for some reason, he neglected to "green" them. I presume he was busy with other matters, and so did not notice the bugs, and not a green leaf was spared. Then the weeds took full possession. It was a sorry sight; I could hardly understand what so good a farmer was thinking about. By and by, however, I noticed a wagon in the lot, and half a dozen men and boys at work among the weeds. They were digging the potatoes, and drawing them to market. It looked like slovenly work. But the next time I drove past, not a weed was to be seen. A good plow, with a jointer, had buried them. The change was wonderful. The field from being a picture of desolation, had been suddenly converted into a model wheat-fallow. It must have required some nerve to have abandoned the crop of potatoes, but it was undoubtedly the wisest course, and the quick use of the plow, enabled our friend to win a victory, out of a seeming defeat. It put the weeds under before they went to seed, and converted them into green manure.

"I think I know what you are about to say," said the Doctor. "You want to recommend farmers to plow their land in the fall as soon as the crop is off. This would certainly improve the appearance of the country. And, on the whole, it is safe advice. But what of the fact, that where no plants are growing, the water which passes through the soil carries off more or less nitric acid."

"I will not discuss this matter now," said I. "It

has an important bearing on some of our farm practices, but I think we need not hesitate to plow land in the fall and otherwise prepare it for spring sowing. I feel sure that it would have been five hundred dollars in my pocket if I had plowed all my land last fall that I was going to sow to barley in the spring. I did plow some of it, and there I had a capital crop. But on two other fields, that were not plowed until spring, the barley was seriously injured by the Hessian fly. If it had been sown a week or ten days earlier, I should have had a good crop—and this year good barley will bring a very high price. And so I feel quite sure that I am safe in advising farmers generally to plow and keep plowing during our splendid autumn weather.

"Many farmers," said the Deacon, "are talking of abandoning barley. This is the first time the Hessian fly has seriously injured it in this section."

"True," said I, "but so far as I have observed it was the poor, late sown crops that were injured, and this fact furnishes another argument in favor of fall plowing and good farming. We should either give up trying to raise barley, or make up our minds to drain our land, work it properly, and make it richer. Barley must have a good, dry, warm, mellow soil. And then we should sow early and drill in some good artificial manure with the seed. Taking one year with another, commercial fertilizers will pay better on barley than on any other ordinary farm crop, and now is the time to get the land ready for the crop. Many crops this year were hardly worth thrashing. Occasionally a good field gave 50 bushels per acre, and just think what a difference this makes in the profit. Figure it out for yourself. Good cultivation does not alone make the difference. But without good tillage, we certainly can not have a good crop of barley."

"You would not plow sod-land for barley in the fall," said the Deacon.—"Perhaps not," said I, "but I would plow all the stubble land; we usually sow barley after corn, potatoes, corn-fodder, beans, roots, etc. If need be, I plow between the stooks of corn before they are husked. We finish the plowing after the crop is husked and the fodder drawn in. The Deacon objects to it because it makes too many dead furrows, but these can be plowed back again in the spring, and by cultivating across the lands the field is made level if desired."

Breaking and Training Colts.

BY E. N. JENNINGS.

The word "breaking" appears in the heading, but it shall be used no further in this connection. Breaking is a brutal word and a brutal practice, and an unnecessary one. *Gentling* is a much better term, and describes the only proper practice. The trainer should be on friendly terms with the young animal so soon as he is approachable, and the training should begin when it is a month old. On first going near the colt, do it quietly and gently; don't frighten him, but be deliberate in voice, touch, and motion. Make every movement on this first acquaintance very cautiously, not to excite his fears. Gain his confidence now, and you will keep it, unless abused afterwards; having his confidence, you can do about as you will with the child-horse. The first motion should be to extend the hand in front of, and as near as may be without frightening him. Then gradually draw nearer, carry-

ing neither whip nor stick. Let him first smell your hand, before touching any part of him. The trainer should govern his actions by those of the colt. If he is inclined to kick, be very careful, and do not let him jump upon or strike you with his fore-feet. A colt, in common with most domestic animals, seems to judge of a would-be-acquaintance or friend by both sight and smell, and fears that which he can not see. The best place to first touch him is on the face. This being permitted, gently caress and fondle him for a few moments, and the first lesson is learned.

Haltering and Leading.

When first approaching to tie him, carry the halter on the left shoulder rather than in the hand, so that both hands and arms may be entirely free. Advance to his near side, as the more convenient, for he is thus less liable to kick. Caress him, and when he becomes calm, let the halter slide down quietly into the left hand. Then very gently, but quickly and surely, slip it over his nose, and with the right hand draw it over his head and fasten it in position. It is important that this first attempt to halter be successful, as otherwise it will afterwards be very difficult to do at all. Having escaped once, more or less frightened, he will shun a second effort to put him in leading strings.

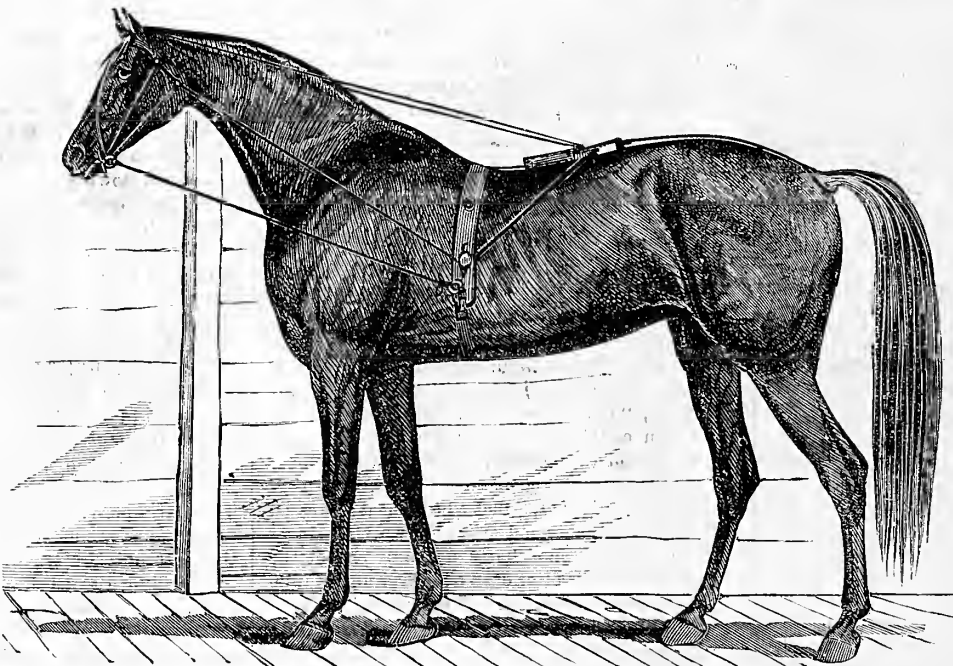


Fig. 1.—A COLT IN THE "MOUTHING TRAPS."

During the first effort to lead a colt (and many horses always), do not look at him, but turn and walk away deliberately, giving a gentle hint with the halter that you would have him follow. If he undertakes to pull at the halter, do not oppose, but ease up as he pulls. "Play him," as a skillful angler does a trout. If you look in his face, or pull strongly at the halter, he will not start. Halt the colt frequently, at first, and pat him; if he does right, be sure to let him know it. A colt appreciates praise, as well as a human being. "Pats are better than taps." If disobedient, don't punish him or pat him, but let him know what praise means. After the colt is halter-broken let him grow, handling and haltering him frequently. Experience proves that a month old is not too young to commence training. At a year old a light harness may be put on, omitting the bridle, or at least the bit, until a year later. There should be no loose straps dangling at the harness first worn, though afterwards allowed that he may get used to them.

Bridling and Biting.

At two years old, the colt that is well broken to the halter, and will permit easy handling, may be bridled and fitted. If he has not been trained to the halter until near this age, a week or ten days of thorough work with the halter, and in leading him by it, is necessary before biting. The illustration, figure 1, represents an easy and convenient means of getting the animal accustomed to the bit, and of toughening the mouth. The apparatus con-

sists of a simple bridle with an ordinary mouthing bit (a snaffle), with reins attached, as shown. On the crupper-strap is a spiral spring in a sheet-iron tube. Through an eye at the rear end of the spring is passed what corresponds to the check-rein. The lower reins, attached to the girth, prevent raising the head too high; the spring eases the pressure from the upper rein on the mouth, and the colt does the toughening himself by working his head up and down. He is backed into a stall, and tied to "pillar reins" made fast to the posts, as shown in figure 2. This keeps his head straight, yet he is not uncomfortable, and the whole arrangement makes him acquainted with the bit, and he learns to respect it. Teach him thus for an hour or so daily, taking care not to tire him, gradually lengthening the time to two or three hours. Each day after this exercise the colt should be taught to back—gently, as it is hard for him to understand what is wanted, and backing is, indeed, about the most difficult thing to teach the young horse. Thorough biting, before harnessing, is desirable, and indeed essential to proper training, but ten days or so of this practice will usually fit the colt for

The First Lesson in Driving.

The young horse should be driven a few times in the harness—the trainer in front—and taught to turn to the right and left, to rein back, etc., before attaching to a wagon; use long reins, and possibly an assistant may be useful to show him what the reining means. Always use a light vehicle at first, as many horses are made haulky by hitching to a heavy wagon at this time. A "kicking-strap" should be fastened over his rump from one shaft to another to prevent his heels hitting the wagon. If a colt hits nothing when he kicks, he will soon stop kicking. In starting off, some one should lead the colt a few hundred yards, to encourage him, and he should be patted when let go. When training, remember that "a light hand makes a light mouth, and a pleasant driving-horse." The

well known important rule of practice, to start a horse by word of mouth, rather than by a touch of the whip, applies especially to the training period.

Saddling

should not generally be attempted until the colt is three years old, though it is sometimes done without injury at two years. An assistant should hold the horse at the first saddling. Let him see and smell the saddle. In placing it upon his back, turn the girths and stirrups over the top, and in fastening the girths, do not let them swing about lest they frighten him; buckle them loosely, for if too tight they are liable to get burst. Let the colt become used to the saddle before riding him. After two or three days, the stirrups may swing loosely in order that he may get accustomed to having his sides touched. Many of these suggestions may seem simple and useless to the ordinary horse-breaker, and to others; but experience teaches that attention to them often makes all the difference between a well trained and a badly broken horse.

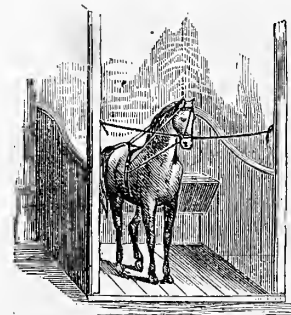


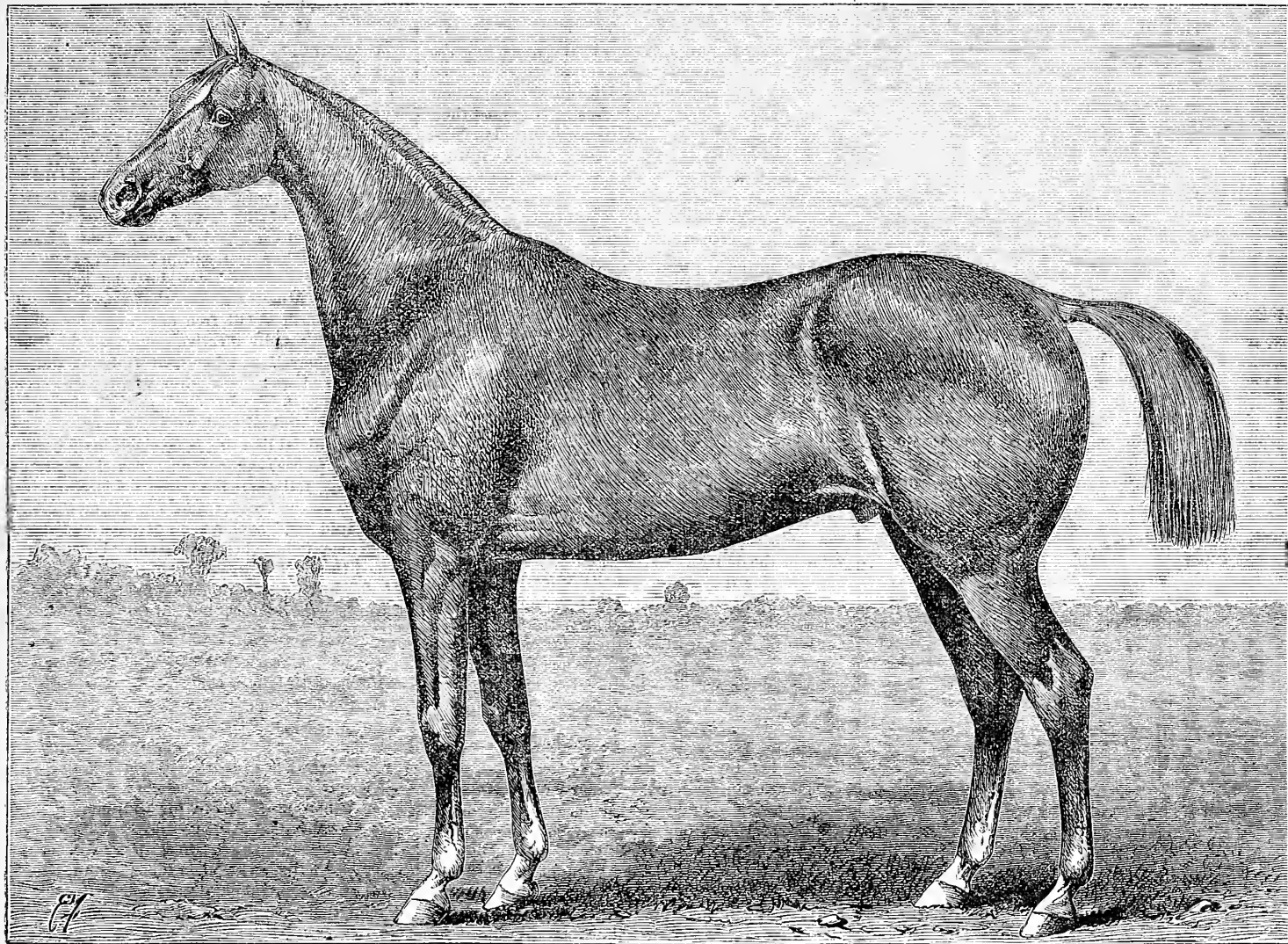
Fig. 2.—SHOWING THE "PILLAR REINS."

A Model Carriage-horse.

We seldom find a more perfect horse for carriage and saddle than the one our artist and engravers have faithfully portrayed in the illustration presented herewith. His name is Dom Pedro, he is a gelding, owned by Mr. Lawson Valentine, of Orange Co., N. Y. He was bred in Schuyler County, his sire being a Morgan from Vermont; his dam was by Texan Jim—quite a famous horse that stood in Seneca County for many years, and sired a large number of fine carriage-horses. This "Texan Jim" is said to have been a wild horse captured on the plains of the Lone Star State. Dom Pedro, however, is strongly of the Morgan type. He is well

himself to that class of farm and draught horses represented by the Normans, Clydesdales, etc. But the majority of the best carriage horses come from the small farms where one or two colts are foaled each year, or from an accident on the part of the trotting-horse breeder. If breeders would turn their attention to the production of such horses as Dom Pedro, their profits would be quite as large as now, as there is an unlimited demand for them; and their work would be more beneficial to the public at large, both pecuniarily and morally. Gentlemen often spend days and weeks in search of carriage horses, and when they do find one combining the desirable qualities of form, weight, spirit, speed, endurance, and good training, are willing to pay a corresponding price for him. Only those

of skill in the use of the sulphuric acid employed to "cut" the bones with. Bones are composed of phosphate and some carbonate of lime, and organic matter, the latter containing the valuable ingredient, nitrogen. The phosphate of lime of bones consists mostly of one part of phosphoric acid united with three parts of lime,* which, being insoluble in water, is not available to plants. But this phosphoric acid is the most valuable constituent of bones, and to make it available in the cheapest manner is the one problem of both manufacturer and farmer. The manufacturer does this by treating 100 lbs. of finely crushed bones with about 50 lbs. of sulphuric acid. This acid combines chemically with a portion of the lime of the phosphate, leaving the phosphoric acid united in the



DOM PEDRO.—A GOOD SPECIMEN OF A CARRIAGE-HORSE.

proportioned and finely moulded, full of vigor and energy, yet so docile that ladies handle him easily. He seems almost conscious of his beauty, and when turned out loose in field or paddock, he will curvet and prance, and dash over the green sod, in view of spectators, with much of the grace and spirit of his free ancestors of the plains. His head is fine, and his face shows a high degree of intelligence; the eye is bright and spirited, but gentle. He is quick to respond to the call of his master or mistress, in saddle or harness, or when loosed from the halter.

In color he is a bright chestnut; he stands about 15½ hands high, and weighs 1,050 pounds. His body is well rounded in barrel, rump, and neck; his legs are fine, hard, and muscular. In "action" he is exceptional, and "steps like a prince of the blood." He is a superior roadster, though not a trotter, nor is desired to be such. "To be king among carriage and saddle horses, is greater than to be second on the turf."

The raising of carriage horses is too little practised among breeders, their knowledge and interest being more centered in the production of trotters; though one is found now and then who devotes

who have engaged in this horse hunting, can understand the scarcity of good horses. Were the demand appreciated, there certainly would be a better supply.

Home-made Fertilizers.

The most successful farmer is the one who avails himself of every means to enrich his land from home resources, and allows nothing to go to waste which can be utilized for plant-food. If success comes when refuse material is only partially utilized, how much greater the success when this refuse is so manipulated as to secure all of its fertilizing properties in the most available form, and in a condition best suited to the needs of the crop?

Fertilizers from Bones

are those most frequently attempted by farmers, because of their known value for the majority of crops. Well made commercial superphosphates are found to be very efficient fertilizers, and farmers often seek to imitate them, but with indifferent success, always with inconvenience, and often with injury to person or implement, on account of lack

proportion of one part, to one and two parts of lime,† either of which is available to plants. Now it is found that when bones—not treated with acid—are reduced to a fine powder, they are more available as plant-food than when in coarse lumps; and the finer they are, the better and quicker acting fertilizer they make. If a fertilizer, nearly or quite as valuable as the commercial article, can be made at home, without acid, it is certainly desirable.

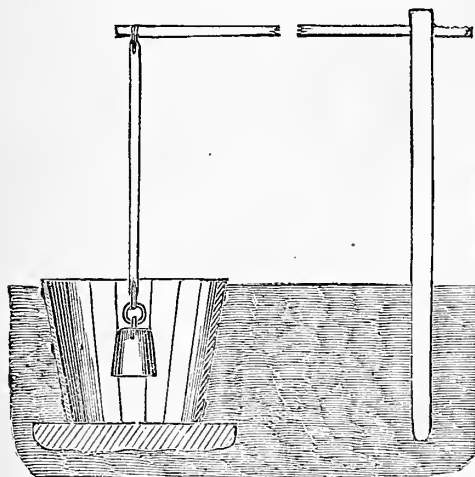
How Shall it be Done?

By putting bones, coarse or fine, even whole ones, into a compost heap of stable-manure or muck, the decomposing action of the organic matter will work upon the bones, and in three to six months' time thoroughly reduce them to a fine mechanical condition. The acids set free in the decomposition also act in a manner similar to the sulphuric acid of the manufacturer—uniting with a portion of the lime, and thus bringing the phosphoric acid into a more available form, as well as converting the organic portion of the bone—or,

* Tri-basic phosphate of lime.

† Mono-basic and bi-basic phosphate.

rather, its nitrogen—into the proper condition for plant-food. The operation, as successfully practised by the writer, and others, is to take all the bones obtainable, or it is thought best to use—either whole or ground—and place them in layers with three or four times as much stable-manure—first a layer of manure, then one of bone, and so on. The whole is thoroughly mixed by shoveling, covered with a few inches of fine loam to absorb any ammonia that may possibly be set free, and moistened occasionally with water, or best with liquid manure. In from six weeks to six months an excellent fertilizer will result, similar in all essential particulars to commercial superphosphate, with the addition of the dung, and may be used with like effect, and on the same crops—reckoning, of course, on the quantity of bone put into the combination, not on the amount of the compost itself. The time occupied by the operation depends on the fineness of the material used—ranging from “ground bone,” to a whole skeleton of an ox or horse—and on the care taken in its management. The heap should be forked over often enough to prevent undue heating or “fire-fanging,” while the moistening keeps up a rapid decomposition. The cost of this will be the price paid for the bones, if anything, added to the labor—in all, not more than one-half to two-thirds the cost of the purchased superphosphates. And in the home-made product we have the surety of a pure article. Of course this method can not replace entirely the use of the phosphate of the market; but for the saving of the waste bones, dead animals, etc., about the farm, is worthy of trial by the economical husbandman. As it is usually desirable to have this bone compost in a condition to apply to the land as soon as possible, if the bones can be cheaply broken into small pieces, they are to be preferred to whole ones. Many farmers know how difficult a job it is by the ordinary means of mall and stone. The device illustrated herewith is



CONTRIVANCE FOR POUNDING BONES.

suggested as an easy means for pounding up bones. A large flat stone is sunk about a foot or so in the ground, and a half-barrel, with the head knocked out, inverted upon it, and the earth is then solidly packed around the barrel. This will serve as a mortar; the pestle may be any convenient heavy piece of iron, fastened to a stout rod, the upper end of which is to be attached by a strap to a spring-pole, which is secured to two posts at the proper height. By this simple contrivance, which is a modification of the druggist's mortar and pestle, the labor is greatly facilitated, as the spring helps to lift the weight, and is but a slight obstruction to its descent. This will serve to effectually smash up the bones, and prevent waste from the pieces flying about.

The Market for Wheat.—Though hard on the people of that country, the great famine in China has created a large demand for the cereals of the other Pacific Coast States. Owing to the drouth of last year, the area in wheat is less than usual this season in that section, but the product brings a better price by reason of this demand from across the Pacific. Steamers from San Francisco

are carrying considerable freight of flour and wheat to supply the Asiatic demand. The increased acreage of wheat in Great Britain and Ireland is estimated at over fifty thousand acres; but to supply the home demand there, about thirteen million quarters (104,000,000 bushels) will be needed from abroad. In France the crop is somewhat below the average, so that country will this year be a buyer instead of seller. Altogether, the prospects of a market for the American wheat are excellent, if prices are not held so high as to prevent free exports. The aggregate crop here is so large that moderate prices only can be looked for.

Among the Farmers.—No. 33.

BY ONE OF THEM.

Butter.

The cheaper butter becomes, the more interest people seem to take in its production. Nevertheless, butter is not really cheaper than in war time when prices were nominally the highest. It ranged then from 38 to 50 cts. at retail, and now it is sold in New York at 20 to 30 cts. Then greenbacks were worth 50 cents on the dollar, now they are at par. The West is vying with the best Eastern dairies in the quality of its butter, while the quantity produced is annually increasing with great rapidity.

Churning and Working Butter.

Do we make butter or—what? If the *grain* is lost and the microscope shows chiefly a mass of ruins of butter globules, caused by too long churning, churning at too high a temperature, or working unskilfully, rubbing and smearing it, instead of simply *pressing* out the buttermilk, then surely we make grease and not butter, though it come from milk and cream of the purest kind, and be treated in the most cleanly manner. My theory of the action of churning, is, that it is not the breaking of all these cells, thus allowing their fatty contents to run together, that makes butter of the highest quality, but when best done it results in the breaking of just few enough of the globules for the outsides of the others to become smeared with their contents and so adhere to each other. Butter thus produced may be washed without loss of flavor, worked, salted, and put into form without becoming greasy. Waxiness is not altogether dependent upon butter globules being unbroken, for at a low temperature almost any butter may be said to be waxy; but the *granular* character which the best butter possesses is never observed in greasy butter; the “*grain*” is gone.

Color remains essentially unchanged in the unbroken butter globules; the delicate flavor, which, by the way, multitudes of butter consumers have never perceived, is here, so to speak, confined; that is, it is confined to the cells—I cannot say *in* them, for mashed and broken butter globules lose odor and flavor, and color too, on short exposure to the air or water. And every butter maker knows that the *good* butter gains color by standing a few hours after being worked. The air absorbed during the working gradually influences the entire mass.

Changes of Flavor.

It would be interesting to know whether this action of the air has any effect in improving the flavor of the best butter. The flavor certainly changes from hour to hour after churning, with considerable rapidity. Some people are exceedingly fond of the flavor of very recently churned butter; others prefer it twenty-four hours old, and it is fair to suppose that after this time if it does not improve; good butter does not deteriorate for at least ten days. A change, however, gradually comes over the best of butter. At first it loses that peculiar creamy flavor, and is even said to grow sweeter; then there is a sort of reminder of clover and sweet vernal grass; of “fresh fields and pastures new,” called the nutty flavor, which gradually passes away. So good butter is *best* when not far removed in point of time from the churn and the pastures.

Tastes differ. I have a friend bred in one of the best dairy districts of Massachusetts, who prefers firkin butter packed in autumn, or even the previous June, to the best May butter he can be served

with within a week from the churning. And another, I almost blush to say it—yet he is a most estimable gentleman and a recognized scientific authority, who, if he has not changed since we were at school together, actually prefers his butter decidedly “strong.” Well, I don't know that I can say anything against the peculiarity of his taste, for after a very short schooling I cultivated a liking for some of the most powerfully odorous Dutch and German cheeses, so as to take great satisfaction in eating that which was promptly nauseating at first acquaintance. I am led to this discussion, to enforce the fact that it is for us butter producers to take all possible pains to cultivate a taste and fashion among consumers of butter which shall neither be satisfied with the article manufactured from beef suet, salted, flavored, and dyed to suit the market, nor with common butter of the stores.

Halter-breaking Heifers.

An occurrence which fell forcibly under my observation a few days ago, enforces the importance of handling young stock more or less, almost constantly. A gentleman bought a yearling and sent two “smart” boys with a dog or two for her. She had never been handled, yet was delivered to the boys, who were lads of 16, or thereabouts, led by a rope upon her horns. It was not long, between the worrying of the boys and fear of the dogs, before she lost her peace of mind. Taking the road at a speed of her own, and not minding much the boy at the end of the rope, she went gaily on her way. Such a heifer knows that a dash through a clump of bushes will free her from flies, and she found it an equally effective way to get rid of boys. So left to herself and her own wild will, she came to grief, and was found after a day or two back in the wood pasture, with one horn off, hipped, cut, bitten, and bruised, and wild as a deer. The ruin of a fair animal like this is no small matter; somebody has to bear the loss, and that clearly can not in this case fall where it ought—that is, about three-quarters on the breeder and the rest on the buyer, who could send such a pack of boys and dogs to bring his purchase home.—No animal is more easily tamed than a heifer, and none will sooner reward kindness with affectionate confidence, not only towards her handler, but towards all mankind.

Familiarity of Cattle with Children.

We do not hear of all the children who are injured or killed by vicious cattle. It is a terrible thing to see a young half-broken cow chase a child out of a pasture if the escape be a narrow one; but how infinitely worse it is to have her overtake the little one and toss or gore it. The child's fright often causes it to faint, which is a great relief and often a matter of safety, for the animal quickly sees that there is no danger to her from such an one. Cows and young stock in this country are usually familiar with men-folks, while they see little of women and children—hence they fear and defend themselves from them just as they would from dogs. In the same way many a horse has been fatally gored by a cow or heifer, simply because the latter had never been made familiar with horses. My horses are grazed more or less in the calf pasture, and so the calves know the horses, old and young, and as cows, are perfectly quiet with them. If this is important, and I think it is, it is ten times more important that the heifers should grow up in familiarity with women and children—be driven and fed by them more or less, and at calving time see that children may play with their calves without any harm coming to them. If heifers pass their first calving without getting frightened and distrustful of men and of children, they will always thereafter be quiet and tractable. The practice of turning heifers and young stock out in the mountain pastures for the summer, interferes with this training, but it should be followed all the more diligently in the winter. We can sell our trained heifers and deliver them on board cars, steamboat, or anywhere else, with whole skins, good horns, and unruffled tempers, with a very little attention to their education at the proper time.

Tethering Horses and Cows.

It is a good while since I have made any modification in my ways of tethering. Horses are tethered

by either foreleg—never by the head. The best tether is a rather stout chain (not less than $\frac{1}{2}$ -inch iron with 2-inch links) with rings and swivels at each end. This is most conveniently attached to the leg by a well-fitting fetter. I had sets of fetters sometime ago which were excellent, but they became rusty and were finally beaten and broken. Since then I have used an inch and a quarter to an inch and a half strap, passed twice around above the pastern joint, each time through the ring, and buckled just so snug that it will not slip over the joint, and yet so loose that it will slip around the leg. The tethered animal must be led to the end of the tether before it is set free, and then watched a little so that it shall not start off with a rush in the opposite direction and be brought up too suddenly. I have never had any difficulty with horses—they seem to comprehend the situation at once. Cows are tethered in precisely the same way, but by the hind leg. They will sometimes kick excitedly for a while, but no harm ever comes of it. To avoid this I usually attach the chain, and then lead the cow some distance to get her accustomed to the burden upon her leg, and to let her see that it will do her no harm.

Standard Fowls.

BY I. K. FELCH.

The numerous poultry papers teem with advertisements of "Standard Fowls." How is this term to be understood? We have seen the practice condemned on the ground that no bird is a standard fowl unless in every particular it fills the description of the Standard of Excellence. In that sense there are no standard birds, for none are perfect. But it is unfair to take this extreme view. The writer holds the opinion that one has the right to use the term "standard fowls" if it be true that the stock he offers will scale 85 points or more; for the standard places the minimum number of points a first prize bird shall scale at that figure. Those opposing the use of the term claim that amateurs are misled by it. But ought they to be so misled? We think not; for there has not as yet been reported a perfect specimen. Although there has been, through the facetiousness of a judge, one or two specimens scaled close up to 100, yet it has never been our lot to see one better than 96 points, unless the excess was the result of credited weight. So long as not one bird in five thousand scales 95 points, we deem the term a legitimate one when used to designate fowls acknowledged as first-class.

Horses with and without Shoes.

The European papers are discussing the question of shoes or no shoes for horses, with the argument apparently in favor of those who advocate barefeet. The fact is cited that wild horses, necessarily unshod, always have fine feet, as also do the horses of most savage and barbarous peoples, even in

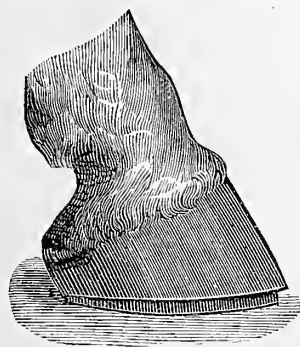


Fig. 1.—HOOF FITTED FOR CHARLIER SHOE.

rocky and mountainous countries. Against the assertion that the hard, macadamized, and paved roads of cities and towns demand a metallic shoe, is opposed the fact that in Porto Rico, at least up to 1840, no shoes whatever were used, yet the streets are paved and macadamized. The races of St. John even, where horses go a mile in less than 4 minutes, are run on the stone paved streets of the town of San Juan; and a writer in the "Live Stock Journal," (Eng.), who spent many years in that island, says that he almost never saw a sore-footed horse there. But the celebrated veterinarian, Mr.

Fleming, comes out strongly in the "Veterinary Journal" against bare feet, claiming that their moist climate and hard roads demand a metallic protection to the hoof, as proved by experience.

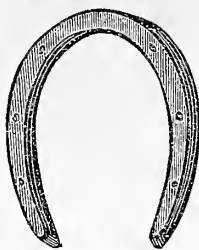


Fig. 2. CHARLIER SHOE.

At any rate the new-old idea is attracting attention, and some horse owners have adopted it in practice. After removing the shoes, the horse is driven only a short distance daily, on a hard road, increasing gradually to from four to six miles in the course of a week. Water is not avoided, but grease is, as then nature is imitated the closest. Until the nail-holes have disappeared, i. e., grown out, the hoof will look rough, and crack off more easily than afterwards. The results of the trials reported seem favorable to the shoeless practice. At first the hoof chips off badly, but soon becomes hard, and the horse seems to like it as much as the urchin likes his bare-footedness. But the experience of generations of shod horses, and the facts and arguments in favor of no shoes, suggest a middle ground, viz.: for paved or stony streets and roads, a metallic shoe; and no shoes for smooth, even hard roads, for country roads free from stones, and for field work, especially on prairie and other farms where there are no stones, or very few. We are not familiar with any instance in America where the use of horses without shoes has been thoroughly tried,

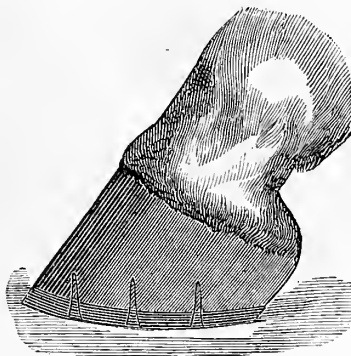


Fig. 3.—THE SHOE IN PLACE.

but considering the great saving and possible benefits that might ensue, we suggest that the question is worthy of careful consideration, as it is certain that at no time is the horse's foot in so healthy a condition as when unshod. A near approach to nature, which allows of the foot resting squarely on the ground, yet at the same time protects the hoof from injury, is the Charlier system of shoeing, which now finds considerable favor in Europe. The method is fully described in the excellent work on "Horse-shoeing," by Mr. Fleming,* who says: "Leave the hoof in a natural condition, so far as frog, sole, and wall, are concerned, and imbed a narrow rim of iron, no thicker than the wall, around the lower circumference of the foot—that exposed to wear—like the heel of a man's boot, and we obtain an idea of the method."

The crust or wall is beveled off with the rasp, and by means of a knife with a movable guide, a groove is made to receive the shoe, as illustrated in fig. 1. The groove is a little shallower than the thickness of the sole, and somewhat narrower than the thickness of the wall, "not extending beyond the white line separating the sole from the wall." The shoe is a narrow but deep band of iron, narrower at top than at the bottom, and so forged that its front surface follows the slope of the hoof, as seen in fig. 3. Its upper inner edge is rounded by the file, and a little of the horn is removed from the angle of the groove in the hoof, which prevents undue pressure of the shoe against the soft horn at that place. In strong hoofs, the shoe is almost buried in the groove; but with flat soles and low heels, it is not safe to imbed it so deeply. Four to six light nails are used; with light driving horses four are sufficient,

placed wide apart at the toe, and close to the heel, as in fig. 4. Fig. 2 represents the shoe. It cannot be used on all feet, and to make the groove and shoe fit well requires some care; but when once understood by the farrier, the shoeing is said to be very simple. The advantages are: leaving the foot in its natural condition as to frog and sole, "the small number and size of nails required, lightness of the shoe, and security to the horse in progression," as it places the foot fairly upon the ground. It is used on horses at all kinds of work, and it is said that the combination of horn and metal stand an astonishing amount of wear for so light a rim of iron. These shoes are usually applied to only the forefeet, as the hindfeet are thought to be not so well adapted to them.

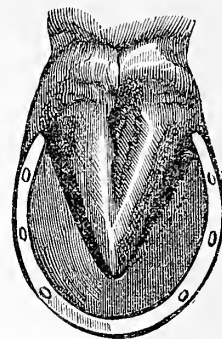


Fig. 4.—MANNER OF NAILING.

The Cultivation of Wheat.

Much interest is manifested in improved methods of managing the wheat crop. Hitherto the preparation of the soil and the sowing of the seed have comprised the whole work, and natural influences have been left alone to modify the results for better or for worse. But of late, the idea has arisen and been gaining in favor, that by making use of the same methods employed to forward the other crops, we could largely increase the yield of wheat; that by cultivating the grounds and destroying the weeds, the plants would be much strengthened and increased in productiveness. That this idea is correct, admits of no doubt; it is reasonable, and ample proof of its practicability has been given by both experiment and practice. In England, France, and Germany, it has been common, for many years past, to hoe the wheat, and to remove the weeds by hand; and of late years, horse-hoes have come into use for this purpose.

The articles published in the *American Agriculturist*, have given rise to numerous requests for further information and discussion of this matter. It is obvious that mechanical cultivation can be applied only to crops planted in rows, and that only drill-sown wheat can be worked by either hand or horse-hoes. It is impossible, in this country, to use hand labor profitably for hoeing wheat on a large scale, on account of its high cost. Horse-power only can be used, and the implement must be made to cover many rows at once. The drills must be separated by such intervals as will permit the safe passage of the hoes between them, and the machine must be carefully guided. In practice it has been found that 9 to 12 inches is the best distance. The defect in most drills as now made, of the spouts being too near each other, may be remedied by tying two of them together, or by removing each alternate one—thus doubling the width of the spaces between the rows. There is then ample room for cultivation. The illustration (see next page) shows the working of an implement such as the Travis hoe. As the frame which carries the hoes is loose, and oscillates somewhat, it is easily managed so as to avoid cutting the plants. The wheat-plant has two sets of roots; one springing from the seed, and another which starts from an enlargement of the stalk near the surface. The latter form the permanent roots, and as these spread, new spires appear above the ground, each of which throws out roots for itself and forms an independent plant, and this in turn increases in the same manner. By separating these new plants from the parents, and transplanting them, repeated several times, as many as 500 vigorous and distinct plants have been produced from one seed. It is thus seen with what facility the wheat-plant will spread when the best conditions for the exercise of

* "Practical Horse-shoeing," by G. Fleming. Published by Orange Judd Company. Price 75 cents, post-paid.

its natural habits are provided. This multiple growth is promoted to the greatest degree by proper fertilization and cultivation, as well as by giving the plants sufficient room to spread. The accompanying illustrations (figs. 1 and 2), indicate how this may and may not occur. At fig. 1 is shown a series of drills the usual distance apart, say 6 to 7 inches; at fig. 2 is a series at double the distance. The former is supposed to be left un-



Fig. 1.—WHEAT IN CLOSE DRILLS, UNCULTIVATED. The plants, therefore, have not sufficient room to spread their roots as becomes strong, healthy, actively growing plants. But in the case repre-

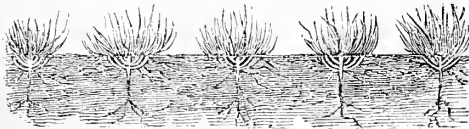


Fig. 2.—WHEAT WIDE APART AND HOED.

sented at fig. 2, a different condition prevails. Here there is room for the plant to spread its surface roots. The soil being opened by the cultivator, is aerated and warmed; the young roots soon occupy it, and the new plants quickly cover the feeding ground thus provided. The drills then appear as in the engraving, and early in spring a vigorous



Fig. 3.—THE WHEAT-HOE AT WORK.

growth hides the spaces between; while in the former case, open ground may be seen for a long time.

There are two ways in which we must improve agriculture; one is by making labor more effective, and to cover more ground by the use of the best methods; and the other is by increasing the yield of crops. By cultivating small grains, as we do corn and roots, we effect both of these desired ends, so far as the mentioned crops are concerned, at least.

Marking the Horns of Cattle.

A correspondent who pastures cattle for other persons, wants a method of marking to easily distinguish those of different proprietors. Steel implements are easily procured having the initial letters of the owner's name on one end. These, heated and pressed on the horns near their ends, give no pain, and leave permanent marks, which may be scraped or filed off if ownership changes.



HORNS MARKED.

The accompanying illustration shows how to mark the horns both with the marking iron and with a common coarse file. With a file one can make any letter or symbol consisting of straight lines, as V, A, W, N, M, etc.

A coarse mill-saw file, or a blacksmith's rasp may be used for a large number of different marks, and in most cases will be the only instrument required.

Making Ox-Yokes and Bows.

Ox-yokes may be of different patterns and styles, but they must be made upon a certain fixed principle, or they will be unsatisfactory in use. An ill-fitting yoke hurts the ox, either by pressing severely upon and galling the shoulders or neck, or by rising upon the neck and drawing up the haws, tending to choke him. Thus an innocent animal, though patient and willing, is often unable to work, and is esteemed lazy and stupid—is subjected to ill-treatment and abuse, with loss of temper by the owner.—The chief points to be considered in making ox-yokes, are strength and lightness of material; length, and the proper thickness consistent with sufficient strength; form and position of the bow-holes, with reference to the proper distance between the oxen; the size of the bows, and the position and form of the hollow resting on the neck.

The timber should not readily split; should work easy, and yet be light and strong. Basswood (Linden) has these qualities in a high degree. The next to be chosen is soft maple or butternut; after these, are cherry and walnut. The piece of timber for the yoke should be sawed 5 feet long, 10 inches wide, and 6 or 7 inches thick. In laying out the pattern, the line of draft is even with the eye of the bolt holding the ring, as the draft is from that point. The center of the pressure of the

animal's neck must fall exactly upon this line, or the yoke is forced to turn up or down, as the draft may be below or above this axial line. If the draft center is above it, the bows press unduly upon the throat; if below, the yoke slips back and chafes the neck, even if it does not choke by drawing the bow up against the throat. The hollow for the neck should not be above or below the curve or are of a circle, the center of which falls upon the draft line, and which are or curve touches the

lines of the bow-holes. This is shown at figure 1, where dotted circles are seen below *a, a*, the centers of which fall upon the dotted line passing through the eye of the draft ring, this representing the line of draft. The lines passing through the centers of these circles at *a, a*, will be the point from which the places for the bow holes are measured. (See *a, a*; also in fig. 2.) To get these points, cut a piece of board into the form of the diagram—5 feet long and 10 inches broad—and divide it into four equal parts by the lines *a, b, a*, figures 1 and 2. The center line, *b*, is the place for the draft ring, fastened by a clamp (fig. 7), as described below. Cut the timber by the pattern, and bevel the edges.

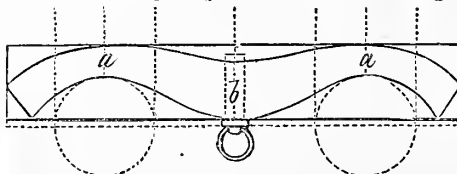


Fig. 1.—MAKING OX-YOKE PATTERN.

The top of the yoke is laid out as in figure 2. The bow holes placed at equal distances on each side of the point, *a*, are bored with a 2-inch auger from

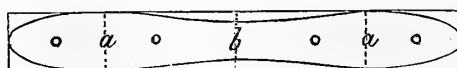


Fig. 2. PROPER FORM OF YOKE, HORIZONTAL SECTION.

each side, meeting in the center of the timber, so as to get them straight; they are smoothed out

afterwards with a red-hot iron. For drawing a wagon, put the bow-holes nearer the center of the yoke than for plowing; and they may be changed—of course changing the center lines, *a, a*, and the neck curve, at the same time—to suit large oxen. For general use, the following sizes will be found about right: 10 inches between the bow-holes, and 20 inches between the two inside ones. For larger oxen, the lines, *a, a*, may be moved 2 to 4 inches nearer the ends, leaving the bow-holes 12 inches apart and 24 inches between the bows. The

Fig. 3.

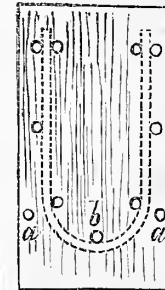


Fig. 4.

sides of the yoke are then hewed out, as seen at figure 2; the bevels on the edges are rounded off; the hollows between the bows are sloped to give an easy fit, and all sand-papered perfectly smooth. The yoke should then be well seasoned under cover, and coated with linseed oil or crude petroleum. The haws should be of good hickory, or second growth white oak, or white ash; 27 to 30 inches in length, and 2 inches in diameter before being finally dressed. Soak the roughly dressed timber thoroughly in cold water for

two weeks; then steam, or soak in hot water, until pliable. Bend into shape, as at figure 3, by the frame shown at figures 4 and 5. It is a 4-inch plank 24 inches long and 16 inches wide, fitted with a number of holes and pins. For convenience, it may be mounted

Fig. 5.—BENDING THE BOWS.

on four legs or pegs, of any length desired. Bend the prepared timber around the three lower pins, *b*, and if not yet safe to bend it completely, leave it half bent, by putting in the pins, *a, a*, for a day to give it a set. The bent portion is then soaked or steamed in hot water until it can be safely brought up to the required form, when it is confined by the other pins and is left to dry and stiffen. By making the pins long enough, as seen at figure 5, several bows may be bent at the same time. When the bows are taken from the frame, the tops should be tied together, to keep them from losing their shape, until put into the yokes. Cut the key holes in the bows, as indicated at figure 6. To fit larger oxen, a second key hole may be made, two inches above the other one, or better in the other arm of the bow, so as not to weaken the first one. The key, made of iron, is shown at figure 6. It is flat, and when put in and turned half round it can not work out. The ring is attached by a broad iron strap clamping the yoke at the center, with screws and nuts at the ends. A plate of iron covers the top of the yoke, and is held by the screws and nuts of the strap; and two pieces of iron, which may be cast, and which fit together over the ring, are held by the strap and by a socket 1/4 inch deep cut into the yoke. The whole is clearly illustrated at figure 7.

Fig. 6. KEY FOR BOW.

figure 5, several bows may be bent at the same time. When the bows are taken from the frame, the tops should be tied together, to keep them from losing their shape, until put into the yokes. Cut the key holes in the bows, as indicated at figure 6. To fit larger oxen, a second key hole may be made, two inches above the other one, or better in the other arm of the bow, so as not to weaken the first one. The key, made of iron, is shown at figure 6. It is flat, and when put in and turned half round it can not work out. The ring is attached by a broad iron strap clamping the yoke at the center, with screws and nuts at the ends. A plate of iron covers the top of the yoke, and is held by the screws and nuts of the strap; and two pieces of iron, which may be cast, and which fit together over the ring, are held by the strap and by a socket 1/4 inch deep cut into the yoke. The whole is clearly illustrated at figure 7.

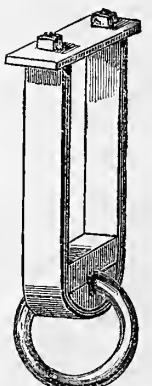


Fig. 7.—STRAP AND RING.

The Cost of Pennsylvania Crops has been investigated by Secretary Edge of the State Board of Agriculture. Circulars were sent to 200 practical farmers, asking the cost per bushel of the leading crops. The average result was as follows:—Wheat, 81.7 cts.; rye, 63.3; barley, 49; oats, 25.3; corn, 44.6; potatoes, 24.8. This includes interest, taxes, manure, labor, etc., and is the total cost.

Cooling Milk, or Milk Coolers.

Dairymen know, or should know, that it is necessary that milk should be cooled rapidly as soon as drawn from the cow, and kept cool until disposed of. Many methods have been devised for this purpose. We recently saw a plan, an improvement on the old-fashioned spring house, which has some useful points. A small building was erected a short distance below a strong permanent spring, from which water was led into it by a pipe. The floor was sunk below the level of the spring, and cemented water-tight. A tank of brick-work, cemented inside and out, was made, 12 feet long and four feet wide, or large enough to hold 40 cans, 18 inches deep and 8 inches in diameter, each holding 15 quarts or 33 pounds of milk. The capacity

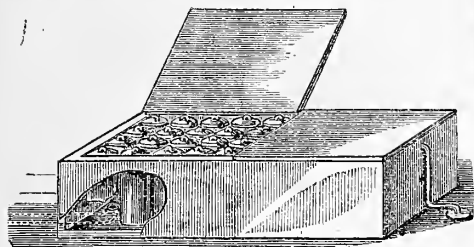


Fig. 1.—TANK FOR FORTY CANS.

of this trough was therefore about 600 quarts, or sufficient for a milk dairy of 50 to 60 cows, yielding a daily average of 10 quarts each, or for a butter dairy of half as many, allowing the milk to set 48 hours. The water flowed into and through the tank, escaping at the lower end. Two lids of plank, covered with zinc, closed the tank and protected the milk from contact with the air. The delivery pipe

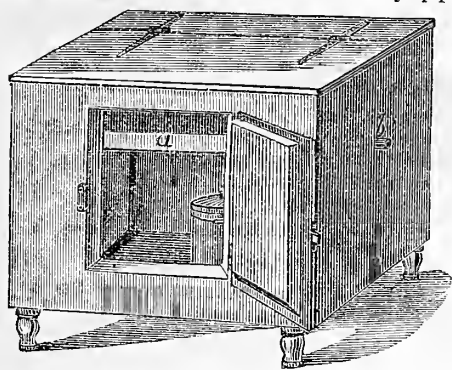


Fig. 2.—THE HARDIN COOLER.

is shown in fig. 1 by the dotted lines. Where flowing water can not be had, and where butter-making is practised, some other method must be employed. Of late, excellent results have been obtained by "cold setting" of the milk in refrigerating closets. Some time ago, we described the Hardin Cooler, which has been in use for some years, but has recently had several improvements added. It consists of a refrigerating closet, which is made of different sizes; that here illustrated (fig. 2), being for 10 cans, which are 18 inches deep, and 8 in diameter. The inside of the closet is lined with zinc, and a zinc tray, *a*, is suspended in the upper part to hold the ice. The drip from the ice escapes by a pipe, *b*, to which a piece of rubber hose is fitted. Formerly, the ice was placed upon a shelf, instead of a tray, and the water dripped upon the

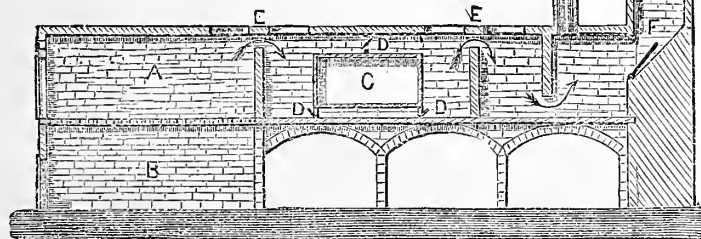


Fig. 1.—FURNACE FOR BURNING STRAW, CORN-STALKS, ETC.

milk cans below. This change reduces consumption of ice; and this may be still more reduced by cooling the milk somewhat before putting it in the closet, when it is rapidly brought down to 45 de-

grees or less. A still lower temperature may be reached by putting salt into the pan. By this means the milk may be cooled to 35 or 40 degrees. At 45° all the cream should be raised in 24 hours. To test the temperature, a thermometer may be plunged into the milk when skimmed. In a trial of this apparatus during the hot weather of August, 50 pounds of ice per day was consumed; and the milk having been reduced to a temperature of 60° before putting it into the cooler, was brought down to 45 degrees in less than three hours.

Grass, Straw, and Corn-stalks for Fuel.

A method of utilizing coarse grass, straw, and corn-stalks, and other similar light combustible matters for heating, has been introduced into the Western States by the Mennonites recently settled there. These people come from Southern Russia, the country of the "Steppes" or treeless plains, which are similar in many respects to our extreme western prairies and plains. Thus they find themselves quite at home, and adapt themselves to their new circumstances with ease. Among others of their peculiar customs, their mode of heating their houses is certainly novel, and is one that may well be adopted by their neighbors. No more plentiful fuel than coarse prairie hay, straw, and corn-stalks, exists in many newly settled sections west of the Missouri river, and other kinds of fuel are scarce. Hitherto, means for conveniently burning such fuel have been unknown. The Russian plan, which is to make use of an enormous brick furnace occupying much room, is cumbersome and inconvenient; but the same principle may be applied in a somewhat different and unobjectionable manner. We give herewith a sketch of a furnace for burning light fuel of the kinds mentioned. It should be built of hard bricks laid in cement. The fire place *A*, figs. 1 and 2, should be large enough to take in a sheaf of straw, or a bundle of hay, or corn-stalks, and the cast-iron furnace door be of a corresponding size. The ash-pit *B*, figs. 1 and 2, is arched at the front and closed at the sides. The furnace should be built upon the ground and have a floor of hard beaten clay, or cement. The oven *C*, fig. 1, is of brick, in the usual form and heated separately, or it may be of cast or sheet iron plates like the ordinary stove. Dampers, *D*, *D*, *D*, direct the heat either to the top or to the bottom of the oven. Walls of brick are built to bring the flame to the roof of the furnace and to retain the heat as much as possible. Openings are made in the top at *E*, *E*, upon which

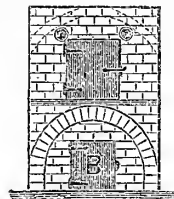
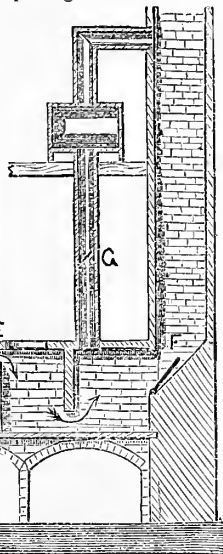


Fig. 2.
FURNACE FRONT.

to place kettles or cooking pots where they will receive the most heat. Arches, under the oven and the rear of the furnace, provide warm closets for various useful purposes. The furnace connects with the chimney through a throat which may be closed by the damper shown at *F*, which would cause the heat to pass up the pipe in front of the chimney into a sheet-iron drum in the room or central hall above. The heat is shut off from this drum, by the damper *G*. Two openings are left in the front of the furnace, one at each upper corner: and are supplied with sliding doors through which a small amount

of air is admitted when the drafts elsewhere are closed, as they should be at night or when a moderate heat only is needed. The arch under the fire-place should be closed by an iron

door, with a grated damper in the lower part. For the iron work of the furnace, the ordinary castings of the largest cooking stoves may be used, and can be procured from a dealer or stove foundry. If it is desirable to heat several rooms, an arrangement of pipes and drums, with dampers, may be made to circulate through the house, entering the chimney on the upper floor. One chimney only, in the center of the house, will then be required.

Cutting and Drying Peat.

Peat has been a very common fuel, in some countries, for centuries past. Its accessibility, its easy preparation, and its cheapness where abundant, give it value. Where peat swamps are convenient, and where the supply is sufficient, it compares favorably with either wood or coal for manufacturing purposes. We speak of it now, however, as household fuel. It is cleanly in use; it gives great heat, or it will smoulder slowly when desired if properly managed, ready to be quickly enlivened and burn briskly. It makes little smoke, and that light and free from soot; and the odor is pleasing to many; the "peat reek" from a Scotch or Irish cabin, being one of the things that a traveller in those countries remembers agreeably. It's one fault is, that the ashes are very light, so that when it is burned upon an open hearth they are floated out into the apartment with the least irregularity of draft. Many farmers who now procure wood or coal with difficulty, have an inexhaustible supply



Fig. 1.

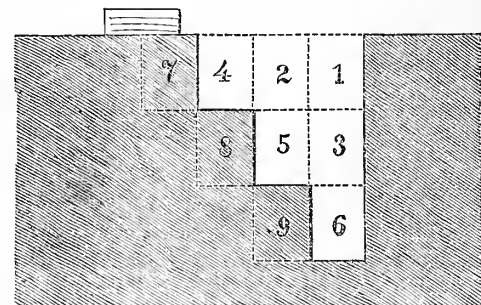


Fig. 2.—ORDER OF REMOVING BLOCKS FROM BOG.

of this fuel at hand. Swamp-muck, as it is known with us, when consisting mainly of the half decomposed remains of roots and stems of woody shrubs and coarse grasses, furnishes excellent peat. When it is softer and more decomposed, it is not so easily handled in the drying, and there is some waste. As fuel, however, this, when dry, is equal to any. When the muck is mixed largely with clay or sand, it is less valuable. When these foreign matters exceed 50 or 60 per cent, the peat makes a poor fuel. When it is desired to work a peat bog or swamp, a drain is first made to carry off the water, the moss and upper stratum of

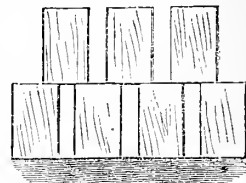


Fig. 3. DRYING THE PEAT.

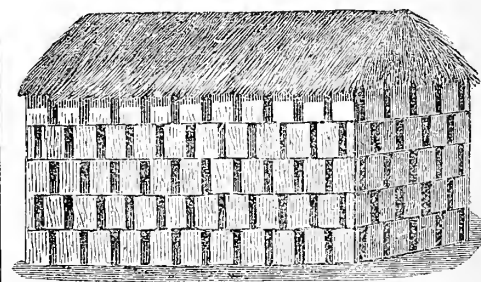


Fig. 4.—THE DRY PEAT STACKED FOR USE.

spongy matter are removed, and the surface of the solid peat laid bare. A tool known as a skean (fig. 1), shaped like a spade, with the sides turned up about 3 inches at a right angle, and with a sharp

edge at the bottom, is used to cut out the blocks. These are cut in the manner shown at figure 2, and in the order indicated by the numbers, for the purpose of keeping the water at the lowest point. The digger stands on a plank lest the soft peat should be broken down by its trampling upon it. The blocks are laid to drain upon the edge of the ditch, and when hardened sufficiently by exposure they are put up to dry in the manner shown at figure 3. As the peats dry, they shrink largely, and when solid enough to withstand the pressure they are piled in stacks for final drying, as at figure 4. The stacks are covered with coarse hay to shed the rain. When thoroughly dry, the blocks are light, but solid, and will bear handling without waste.

In burning this fuel, care is needed to manage the fire with success. A block is first broken up and the pieces are lightly placed upon some shavings or other kindling. A few half blocks are laid over these, and then whole ones so placed as to leave as large air spaces as possible between the blocks. Thus arranged, they burn lively and make a bright glowing fire without flame, and with little smoke. It is a pleasant fire to broil meat over. When a slow fire is wanted the peats are laid close together, and some ashes drawn over them.

Packing Eggs for Winter.

Of the various methods practised for preserving eggs for winter use, one of the most effective is that employed by the dealers who buy when the supply is large and prices low. This is as follows:

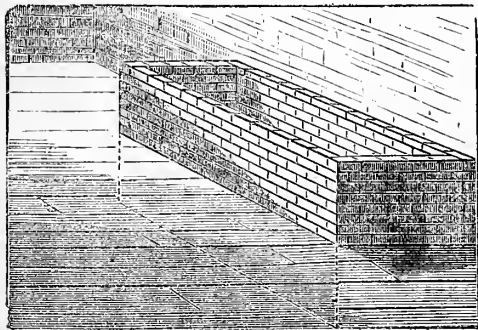


Fig. 1.—VAT FOR PICKLING EGGS.

Brick vats, or wooden tanks, are constructed in cool dry cellars, partly sunk below the level of the floor, as in figure 1, the dotted lines showing the portion below the ground. These vats and tanks, —or casks, which may be used instead,—are partly filled with a preservative mixture of thick lime-water, or milk of lime, to which are sometimes added salt and a small quantity of cream of tartar (bi-tartrate of potash) and the eggs are placed in this mixture and kept covered. The eggs are placed in the tank by means of a peculiar dipper, (fig. 2) made of a round, shallow tin pan, with a long handle, the tin being perforated to drain off the liquid. The eggs are lowered to near the bottom, and gently rolled out, with little risk of breakage. Here they remain until required for sale. If they were fresh when packed away, they will come out after three or four months so little changed, that few persons would be able to distinguish them from fresh ones. When wanted for sale, they are taken out of the pickle with the dipper, and care-



Fig. 2.—EGG LADLE.

fully placed in the crate, shown at fig. 3. This is made of laths; but an open splint basket would answer the purpose as well. A large low tub, as half a hoghead, is provided, and two boards are placed across the top as seen in fig. 4. The crate of eggs is placed upon the boards, and water is run through it until all perceptible traces of lime are removed. In this method of preservation, there is nothing that may not be done in a small way, and with any substituted apparatus which will answer the purpose. One thing is imperative—the eggs must be fresh when packed, or they cannot be kept in a good condition for several months.

The Lack of Educated Veterinarians.

BY A. LAUTARD, M.D., V. S.

Inducements to Young Men to Study Veterinary Surgery and Medicine.

The *American Agriculturist* for September, contains an excellent letter from one "Among the Farmers." His hints on treating ailing animals, on Veterinary Surgeons, etc., are very good, and as one among the Veterinarians, I would say a few words in confirmation of your correspondent.

That the number of educated Veterinarians is yet far below the requirements of the country, every one knows, and it will probably remain thus for some years to come. Why should Veterinary Science stand so low among us, while the number of domestic animals is so great? It is not merely because our people are ignorant of the real value of the profession, for every one will admit that Veterinarians are much needed, that it is a difficult profession to master, and that it requires as much study as to become a physician, if not more. It is rather because those engaged in the profession, generally speaking, have proved unworthy of the confidence of the people, either by their conduct or by their ignorance and their own social standing. Scarcely one respectable veterinarian can be found where there are ten such pretending practitioners. This being the case in many large cities, what must it be in the country?

It was to remedy such condition of things that Veterinary Schools were started. I would here correct an error of your correspondent. He says: "We have two or three Veterinary Schools." There is at the present, only one Institution entirely devoted to the study of Veterinary Medicine, in active working order, viz., the "American Veterinary College," situated in New York City, at 141 West 54th St., which has been frequently announced in the columns of the *American Agriculturist*. This Institution, far from "struggling with poverty or lack of appreciation," is in a prosperous condition and is fully satisfied with the success it has met since its opening. Its facilities are as good as those of any of its kind; it has a faculty of eight professors, who, since 1864, have been lecturing every session. This College is well prepared for work; its lecture-rooms and dissecting room are every winter well filled by students from all parts of the country, while the museum contains

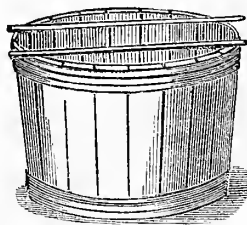


Fig. 4.—TUB FOR DRAINING THE EGGS.

nearly 3,000 specimens for illustrating the lectures. The hospital and clinics brought last year nearly 1,500 patients [diseased animals] before the class. So far from fearing as to its future, the officers are now puzzled to foresee how they will accommodate their class a year or two hence. The Alumni of the "American Veterinary College," are, of course, yet few in number, but these few are to be found in the States of New York, New Jersey, Pennsylvania, Massachusetts, Illinois, Maryland, Ohio, etc.; and they now form the nucleus from which Veterinary Science will extend its influence far and wide.

Other schools have been started in different parts of this country, but, for reasons easily understood, all have failed. The "American Veterinary College" has proved a success because it was not started for money-making, but for scientific objects, and, with the officers who undertook to carry on the work, it could not prove a failure.

Your correspondent asks, "Why should not Physicians treat animals as well as men?"

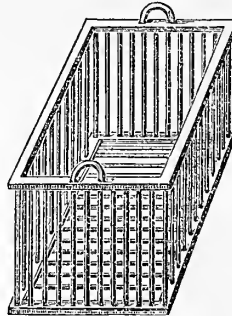


Fig. 3.—CRATE FOR IMMERSING EGGS.

In the present condition of the country, with almost no Veterinarians of education, I, as one of them, accept this proposition, and say that rather than to trust to nature alone, and certainly instead of leaving our animals in the hand of every empiric, quack, horse doctor, or any impostor of that sort, by all means let our Physicians give timely assistance and good advice.

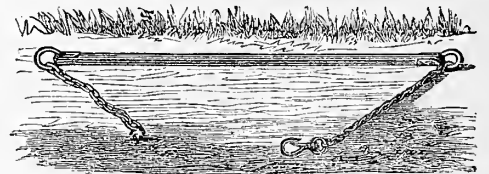
But is it necessary that we should depend on our medical man for advice as to domestic animals, and would he be the proper man for that double work? —We doubt it much; though similar in generalities, the two branches of medicine are so different in their details, that it seems to be asking too much of a man to be both a good V. S. and a safe M. D.

Let young farmers look at the veterinary profession in its proper light; let them remember that it will require hard study and steady application before they can qualify themselves for practice; let them appreciate the fact that veterinary medicine is not merely *horse-doctoring* or the like, but that it is a profession of science and of learning—one which is of the greatest importance to our national wealth—agriculture being the wealth of a country. Let them impress their minds that it is not the profession which makes the man, but the man who makes the profession, and I am sure that but very few years will pass before a sufficient number of educated men will be found to remedy the need at present so much felt by our farmers. Let me add a few words, which I am sure will carry weight in favor of veterinary science. Out of the whole list of the Alumni of the "American Veterinary College," there is not one who does not command a paying practice of from \$1,500 to \$4,000 a year; and this not after several years from the time of graduation, but in some cases in a few months after leaving college. What business, what trade, what other profession, offers to young men greater inducements?

[In allowing this well deserved praise of the Institution mentioned, the impression may be conveyed that there is no other Veterinary College in good standing in America, which our Canadian neighbors may resent, as there is an excellent Veterinary College at Montreal, which we do not doubt graduates skillful practitioners.—Eds.]

A Safe Tether.

In tethering animals, the danger of the chain or rope winding around their legs and throwing or fettering them, may be avoided by attaching a strong rod, as a portion of a young hickory sapling, about 8 feet long, to the end of the tether, and by a short chain not more than 2 feet long to the neck strap



A COW TETHER WITH ROD.

or headstall. The end of the rod nearest to the animal is thus raised a little from the ground when its head is up, and cannot be interfered with by the feet, nor can the tether chain become entangled about the legs. The method of attaching the rod is shown in the accompanying illustration.

Color of Farm Buildings.

In painting even a shed it is just as cheap and easy to give it a pleasing color, as to make it a blemish on the landscape. Barns and other farm buildings, painted red,—especially the dark Venetian red—offer a fine contrast to the green of the fields and trees, and we are pleased to note that the use of this color is increasing. The numerous red buildings of English farms are very attractive to the traveller's eye; and they are not only handsome in appearance, but also give an air of thrift and permanency to a place, which unpainted wood, or white or straw color, do not impart. We

have one set of farm buildings in mind, in which the brackets and other trimmings are finished off in black, with a most satisfactory effect. The black thus used, gives a distinctness and boldness to the details, and forms with the red walls a happy combination, and one most appropriate in its place. Red barns and out-buildings are not rare; these, when of a glaring, self-asserting red, are not pleasing, and they are still less so, when they are, as we often see them, trimmed with white. It is a rule of good taste in painting buildings, to have window caps, brackets, and other details, darker than the ground work or main body of the material. Why not apply the same principle to farm buildings, especially as it costs no more, and adds to the attractiveness and value of the structure?

For example, a brick house, with a white-marble door way, window seats and caps; and a white cornice, will always look frivolous and cheap; where the same details are of the much cheaper brown-stone, the house has an air of dignity and repose, quite lacking in the other. Other farm buildings are often quite as conspicuous as the dwelling, and in decorating them, quite as much thought should be given to having them pleasing to the eye, especially as it need not require an extra outlay.

The Agricultural Display at the Paris Exposition.

[From Our Special Correspondent.]

The American exhibit is small, but excellent so far as it goes, and evidently attracts much attention from foreign agriculturists, many of whom have given sample orders for some of the improved machinery. The articles exhibited are in what is known as the "American Annex," occupying two-thirds of this building, the other third being devoted to vehicles and their accessories, and miscellaneous tools and implements.

A collection of State exhibits occupies a prominent position in the center of the building, consisting of a large variety of seeds tastefully arranged, dried fruits, wool, cotton, specimens of the different woods, and tobacco growing in pots. About this central point cluster exhibits of agricultural tools and implements of various kinds, many of them being supplied with power, and shown in actual operation. Among the most prominent exhibitors are Walter A. Wood, of Hoosick Falls, N. Y.; the Johnston Harvester Co., of Broekport, N. Y.; D. M. Osborne & Co.; Warder, Mitchell & Co., of Springfield, O. (manufacturers of the "Champion Mower"); C. Aultman & Co., of Canton, O. (manufacturers of the "Buckeye Harvesting Machine"), etc., etc. Fairbanks & Co. make a splendid exhibit of their scales, several of which are adapted to weighing by either the English method or the French decimal system—a happy idea.

The English display, located in the adjoining pavilion, occupies a much larger space, and is very creditable. All the best-known manufacturers of agricultural machinery are represented, and their exhibits show a variety and perfection of detail which have surprised many Americans who supposed that improved farm implements were peculiar to their own country. Probably England has never made a more complete exhibit of her skill in this line, and the effort will no doubt prove remunerative, for the French agriculturists, with increasing faith in the stability of republican government, are now keenly alive to everything that means improvement and development, and they stand ready to take hold of whatever promises them assistance.

The French display is remarkably full. Evidently, no trouble or expense has been spared to make it as complete as possible, and the result, due in a great part to forethought and proper organization, is highly creditable, the collective exhibits being by far the most interesting and instructive. The "French Machinery Pavilion" is mainly devoted to "Materials and Processes in Agriculture," a few of the most important deserving more than the passing notice which we can here give them. Indeed, many of the single exhibits offer sufficient material for special articles. The Gennevilliers exhibit illustrates in detail the method of irrigation

adopted in the Plain of Gennevilliers, located six miles from Paris (nearly opposite San Denis), where the sewers of Paris pour out their immense tide of refuse. Samples of this sewerage are shown in bottles. It consists of a thick, black, greasy liquid. What to do with it was for a long time looked upon as a difficult problem. To let it escape into the Seine—a comparatively small stream, as rivers go in America—was not only to pollute its waters, but to waste a valuable fertilizing agent. But how to utilize it! Somebody had a happy thought—to conduct it to Gennevilliers' Plain, and use it for irrigation. This plan has proved a complete success, and led to developing one of the most extraordinary agricultural districts in the world. A sort of miniature lysimeter is on exhibition, 2 ft. by 18 in. and 3 ft. deep, with glass sides, showing the character of the soil thus fertilized, and with four cocks in the bottom, to let out the moisture, and admit of its being analyzed. A variety of specimen fruits and vegetables, grown on soil of this kind are shown, all remarkable for their great size, and healthy appearance. A large variety of natural and artificial manures, are shown in the same building, many of them accompanied by interesting reports upon them, and on the results that have attended their use.

Crossing the foot-bridge over the street, we enter now, Pavilion No. 1, devoted to "Agricultural Products," including seeds, geological collections of soils from different sections of France, various fruits and grains of all kinds, feed for animals, specimens of timber, wool, beets and beet-sugar, hand-tools, churns, models showing the diseases of cattle, and accompanied by suggestions as to their treatment, artificial cow and goat-milkers, etc., etc. The most prominent displays in this building are the following: The collective exhibit of the Department of the North, including a remarkable display of wheat, flax, sugar-beets, etc.; the exhibit by the Arcy Dairy Farm, owned by L. Nicholas; exhibits of teasles, poppies, and coniferous seeds; a variety of views showing the plan and arrangement of model farms; and that of A. Bignon, of Theneville, Department Allier, consisting of thirty water-color drawings illustrating the comparative condition of his farm in 1849 and 1878.

Pavilion No. 2, "Materials for Agriculture," is mostly filled with plows, which are shown in a great variety—nearly all of them being provided with wheels. Among them are scattered numerous machines for sowing and harrowing, hay-cutters, and boilers for preparing food for cattle and pigs.

Pavilion No. 3, "Agricultural Products," includes collective exhibit by the *Société Centrale d'Agriculture de Meurthe and Moselle*, showing wine, wool, hops, etc.; a huge diagram representing an analysis of different varieties of feed given, from 1872 to 1878, to the horses employed by the *Compagnie Générale des Voitures* in Paris (If their condition is a safe indicator, beware of feeding American horses on the same system); samples and analyses of different soils in Eastern France; a beautiful model of the Cosdon Farm (G. Cuisson, proprietor), in Canton d'Eroy-Aube, France; exhibits of honey, pelts and potatoes; silk worms and silk culture, shown in all stages; a large exhibit by *L'Ecole Pratique d'Agriculture*, of St. Remy, Department Haute Saône, France, including working drawings and plans of farms, with arrangement of the different buildings, a working model of a piggery, executed by one of the pupils of the school; economical herbs; oils; a grand exhibit by the *Ferme Ecole de la Plétière*; working models of stables and farm buildings, made after the "System Toilet" (address, No. 16 Rue de Grammont, Paris); and lastly, an exhibit of the method of mechanically

feeding and fattening poultry, etc., accompanied by a fine series of pictures illustrating the process.

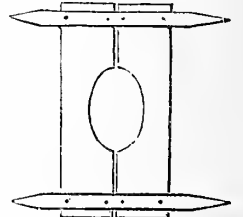
Just in front of Pavilion No. 3 is a smaller structure, always crowded with visitors, which contains a number of incubators, and chickens and ducks in all stages of development; another containing model stables; and a third devoted to cut-flowers, which, to the writer, was one of the most fascinating resorts on the grounds.

Near the bridge which leads to the Trocadero is still another great building in which France displays the results of her persevering efforts to develop to the utmost her agricultural resources, and it somewhat tones down the opinionated American who has previously been sure that his country is ahead of the world in all that pertains to agriculture. France, with a territory smaller than that of the single State of Texas, shows her agriculture to be in a condition which America may well study and emulate.

PARIS, August 13th, 1878.

G. W. W. H.

A Yoke for a Sucking Cow.—"J. W. S.," sends a method of yoking a sucking cow, so that she cannot exercise her disagreeable habit. The yoke is made of two boards, 8 inches wide, and 2½ feet long, hollowed out to fit the animal's neck when put together, as shown in the cut. The yoke is held together by two cleats, with two bolts each; the ends of the cleats are pointed, and project a few inches. When the yoke is hung upon a cow's neck, and she turns her head to suck herself, the pointed cleats come against her side, and effectually prevent her from reaching her teats.



Cutting Large Logs for Firewood.

"A Subscriber" wants a method of using a horse-power with a drag-saw for cutting large logs into firewood. A simple arrangement for doing this may be made as follows: A drag-saw is attached to the balance wheel of the horse-power, the wheel having a crank rod attached, as indicated in the illustration. This rod may be made of tough hickory or oak. The saw is pivoted to the shaft, as shown in figures 1 and 2. The forward part of the crank rod rests and slides in a groove or guide in a post of the foundation timber (fig. 1). This guide is arranged so that the saw will not drop

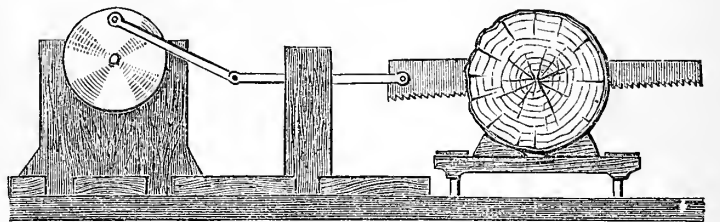


Fig. 1.—DRAG-SAW FITTED TO HORSE-POWER.

lower than the bottom of the log, and not cut into the log carriage. In figure 2 the crank is made to give a reciprocating motion to the saw by the lever, *a*, the guide being at *b*. The log carriage may be a common sled, upon which the log may be rolled

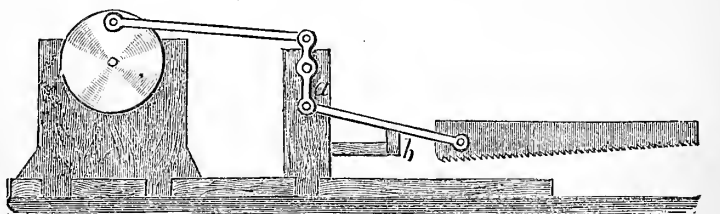


Fig. 2.—SHOWING CRANK AND LEVER ATTACHMENT.

and drawn to the saw; the log should rest upon rollers so as to accommodate the saw, and be blocked up to keep it steady. The supporting frame is shown in section in both of the above illustrations.

The Animal Poison of the Far West.— "Loco" or "Crazy-Weed."

BY PROF. ASA GRAY.

[For several years there have been vague reports concerning the poisoning of domestic animals by some plant or plants in the far West, but we had been unable to learn anything positive concerning it. When Doct. Gray started last year with Sir Joseph D. Hooker to explore portions of the Rocky Mountains and California, we directed his attention to these reports, and asked him to endeavor to ascertain something definite concerning the trouble and the plant causing it, but his journey was made too late in the season for him to learn much concerning it. Since then letters and specimens have come from those having a personal knowledge of the injury to animals; these were placed in Doct. Gray's hands, who in the following article sums up the present botanical knowledge on the subject.—Ed.]

The papers for several years have abounded with accounts of a deadly Rattleweed, and of the havoc it makes of sheep and goats, as well as other cattle, in the southern parts of California. The following are examples of the letters we receive in respect to this notorious cattle-poisoner of Colorado.

Early in May specimens of the plant came through the kindness of a friend from a drug firm in Hutchinson, Kas., who wrote:

"We send a sample of a plant called by Mexicans and Spaniards 'Loco,' and by our stock dealers, 'Madweed,' 'Crazy Plant,' etc. It is death to cattle, sheep, and horses, and seems to be known only in a strip of country from Indian Nation, westward to California. The peculiar influence on stock is manifested by making them 'crazy.' They have dullness of vision, thirst, dizziness, and finally coma and death. Some of our stock dealers have lost as many as ten horses this spring from its effects."

In the following June, specimens were sent to the Editor of the *American Agriculturist* by F. T. Brooke, Esq., of Huerfano Co., Col., who wrote:

"When eaten by stock it renders them perfectly crazy. It is called by the Mexicans 'Loco' or 'Crazy-weed.' A few mouthfuls will not affect an animal, but he soon becomes attached to it as a man does to whiskey, and will eat nothing else. The animals eating it are affected differently: some become perfectly wild, refuse to be ridden or worked, while others become listless, stupid, and unfit for anything. Some pine away and die; others live on year after year, but are utterly worthless, unless stabled and allowed nothing but hay and grain; under such treatment some recover entirely, but are apt to commence eating the weed again if turned out to graze."

In order to obtain all the facts possible, the Editor addressed to Mr. Brooke a series of questions, to which the following came in response, and will indicate the character of the questions:

"To the best of my knowledge and belief, the 'Loco' is the plant that does the damage. I have seen horses eating this weed by the hour, without

touching anything else, and these horses were affected as described in my first letter. Although there is great difference of opinion in regard to another weed that we have, which seems to be fatal to cattle only, all stockmen agree that 'Loco' is the weed that affects our horses. There are very few mules in my immediate neighborhood, and I have never known any to be injured by it, but oxen and cows are affected the same as horses. But I do not think they eat it as readily as horses, for we have very few injured by it, whereas I have known of an entire herd of horses being injured more or less by it. We have no hogs, except what are kept up. I do not think sheep are injured by it. I

and commence again when the first snow falls. Animals are injured by it, I think, regardless of color. Here, where I live, at the foot of the mountains, the plant is common everywhere. I have none in my pastures, having taken the precaution to dig it up, but I understand from others that when cut and dried with hay it is not injurious."

The plants pointed out to us in both regions, or sent for naming, have all been of the Leguminous family, and of the *Astragalus* tribe.* The species to which this damage is attributed in the plains of Colorado, proves to be the *Astragalus mollissimus* of Torrey—a very downy species, as its name indi-

cates—and to show what it is like we have here given a figure of it. We never found this species on the mountains. But there the same ill effects are charged upon plants of similar appearance, belonging to a nearly related genus, *Oxytropis*, mainly to *O. Lamberti*, which abounds at all elevations up to 8,000 or 9,000 feet. The botanical difference between these plants is so little that they might all be counted as species of *Astragalus*; but there is reason to think that this particular *Astragalus* of the plains of Southern Colorado is much the most dangerous. For this species is not found as far north as Wyoming and Nebraska, where the *Oxytropis* abounds on the plains; and there we never heard of this trouble. There was a prevalent notion that plants of the Pea tribe (Papilionaceous plants) generally are innocent, if not wholesome. No one suspected a tribe which gave us peas, beans, lentils, and the ubiquitous pea-nut, and supplies such fodder as does Clover, Medick, Lucern, Vetch, and Cow-pea. In the first edition of his "Natural System," Lindley wrote: "The general character of this tribe is its nutritious, or at least, wholesome properties." Later, the note is changed, and in the "Vegetable Kingdom" he declares of the order, "that upon the whole it must be considered poisonous, and that those species which are used for food by man or animals, are exceptions to the general rule; the deleterious juices not being in such instances sufficiently concentrated to prove injurious." What a pity that our cattle are not better acquainted with the corrected rule! In Europe, and in the Atlantic States, no harm is known to come to cattle from want of proper discrimination. But

when European flocks were taken to Australia, and to pasture and forage almost wholly new, thousands of sheep perished in the Swan River

* But Mr. Sereno Watson, when in Utah, was shown a "Crazy-grass," growing along the banks of the Jordan, which was said to craze horses that fed on it. The grass was *Phalaris arundinacea*, the Reed Canary Grass, which has always passed for good fodder, and was never known to affect the intellects of horses or cattle in other parts of the country or in Europe. Probably the grass got the bad reputation, but some *Astragalus* did the deed. But there are "Crazy Grasses," one in S. Africa, one in Mongolia. Even the most reputable families—and the Grass family is at the top of the list—may have some disreputable members, like the "Drunk Grass" of S. Africa.



THE "LOCO" OR "CRAZY-WEED" OF THE FAR WEST.—(*Astragalus mollissimus*.)

don't know that they ever eat it; I have seen them in the midst of it, and could not see that any of it had been eaten. I do not think it affects the bowels or urine. I have heard (but won't vouch for the truth of it) that the brain of horses dying from eating the weed, is entirely destroyed. Hence a legend among some of the cow-boys, that it is a worm in the weed that finds its way from the stomach to the brain which it eats up. I know of no cases where horses died immediately from eating it. I do not think, as a rule, that it is fatal. It is supposed to be equally active at all seasons, but I think horses acquire a taste for it in the spring; it is one of the first green things they can get, and they eat it in preference to the old grass. If kept up until the grass gets a good start, they scarcely ever touch the weed. I have never had any horses affected by it, as I feed hay and grain until June,

Colony in consequence of cropping the leaves of some leguminous plants to which they were attracted. What made the matter worse for the botanists, was that the very plants which did the mischief had been recommended by one of them (Mr. Preiss, a German,) "as the best thing the Agricultural Society could cultivate, as artificial food for stock." But another botanist, Drummond, a canny Scotchman, got up some experiments, and proved that the people were right in charging the damage to these very species (of *Gastrolobium*) which the German botanist on general principles, expected to be innocent and useful.

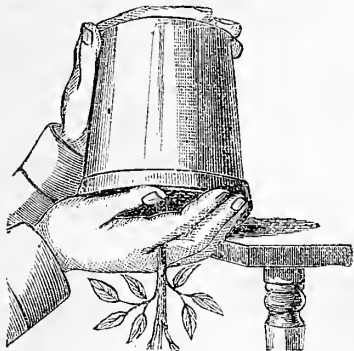


Fig. 1.—REMOVING THE BALL.—(See next page.)

The same plants are fatal to goats, and even to cows and horses. The symptoms, as described, are almost exactly like those produced by the Loco-weed. In other parts of Australia, species of a different genus (*Swinsonia*), very like *Astragalus*, and like the Bladder Senna (*Coletea*), destroy cattle in the same way. Now the leaves of Bladder Senna, like those of true Senna, contain some *Cathartine*, and purge but do not poison. Those of the poisonous species in Australia are

solation that this is not a new thing under the sun. The next thing is to learn, if possible, the exact nature of this fatal affection. For this it is desirable that some competent persons, both in Colorado and California, should make *post mortem* examinations of the stomach and brain of some of the various affected animals, of sheep as well as cattle and horses.

Early Peaches—The "Waterloo."

When "Hale's Early" made its appearance some 15 or more years ago, it marked an advance in peach culture, much as the "Early Rose" did in potato growing. In both cases we have gone far in advance of these, but they showed possibilities, and served as a sort of standard for the comparison of new comers. The fair quality, great beauty, and especially the earliness of "Hale's Early," caused it to be very widely and largely planted. But a general disappointment followed, for save in a few localities the fruit, as soon as about to ripen, commenced to decay, and it at present proves profitable in the hands of but very few. The "Early Beatrice" came next; it was claimed to be earlier than Hale's and free from its fault; but it proved quite too small for profit, as did some others of Rivers' seedlings introduced at the same time. Following these were numerous native seedlings, largely from seed of Hale's Early, until at the present time the number of varieties claiming the title of "earliest and best" is so large that even those who make a specialty of raising peach trees and peaches can hardly keep the run of them. These new varieties come from several States, and each season adds to their number. Several of the prominent new early peaches are so nearly alike that one so experienced as Charles Downing, in speaking of some of them in a recent article in "Gardeners' Monthly," says:

ties to be earlier than the other. Our correspondent, R. J. Black, Fairfield Co., O., found that both "Alexander" and "Amsden's June" commenced to ripen June 28th, and that half the crop was ripe on July 4th. He says of these: "These two are very much alike in tree and fruit.... 'Alexander' is probably a little the larger, while 'Amsden' is the greater bearer. Not that 'Alexander' is at all shy, but 'Amsden' is profusely productive and imperatively needs thinning. Both are of fair size, attractive, and of good quality."—We agree with Mr. B. that ripe peaches in Fairfield Co., O., the first week in July, "is something to be grateful for."

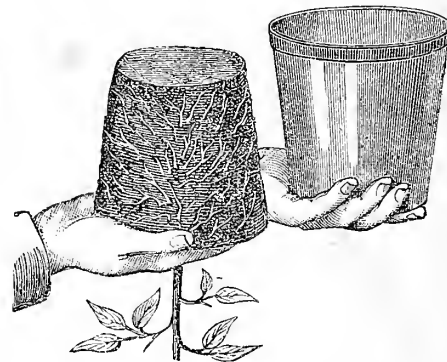
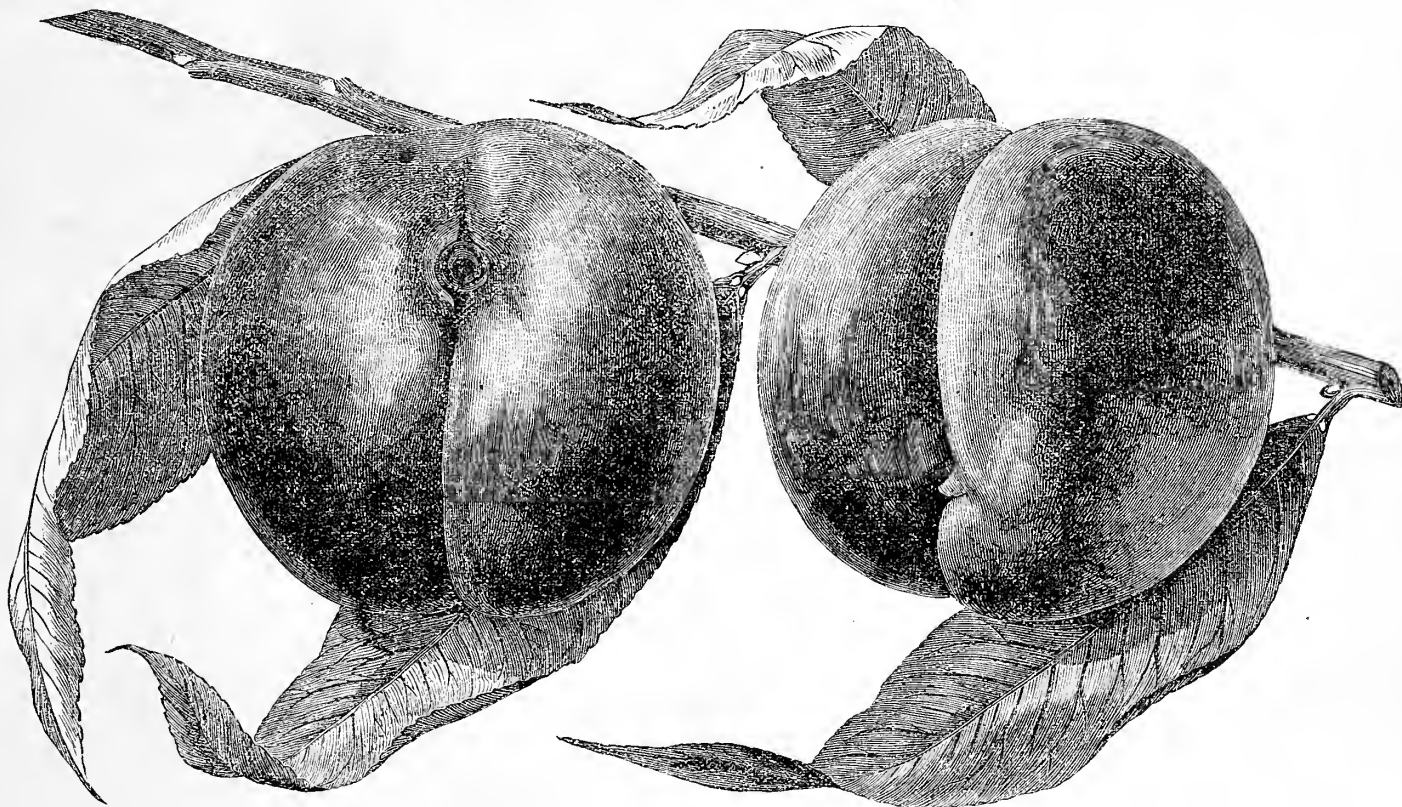


Fig. 2.—THE BALL REMOVED.—(See next page.)

Knowing Mr. Randolph Peters, Wilmington, Del., to be largely engaged in growing peach trees, and to be thoroughly familiar with the orchards of the great peach district comprising Delaware, and parts of Maryland and Virginia, we requested of him a report of the new early peaches during the past season. Mr. P. writes substantially as follows: "There are so many new extra early peaches that



NEW EARLY PEACH—"WATERLOO."

found to contain an alkaloid, apparently *Cytisin*, to which the injurious properties are due. What we have to suggest, is, that the herbage of *Loco*, and of some of the Californian *Rattle-weeds*, should be submitted to chemical analysis, to determine if they contain an alkaloid, and if it is the same or similar to *Cytisin*. No antidote has yet been found, so far as we know. If any should be discovered, and if the poisonous principle proves to be essentially the same in Australia and in the United States, the same treatment would be applicable to both. All that the botanists can now do is to indicate the source of the trouble, and to offer the poor con-

"If the four kinds were put in a dish it would puzzle a good pomologist to separate them, and yet there is no doubt but they are all distinct kinds." This close resemblance is not to be wondered at, when we recollect the marked tendency of some varieties of peach to reproduce themselves in their seedlings, and it is very probable that the kinds so much alike are seedlings of the same variety. The two most prominent of the newer early peaches are "Amsden's June" and "Alexander," varieties so nearly alike that some claim them to be identical. We find that reports differ as to the relative earliness of these, each being claimed in different locali-

ties to be earlier than the other. Our correspondent, R. J. Black, Fairfield Co., O., found that both "Alexander" and "Amsden's June" commenced to ripen June 28th, and that half the crop was ripe on July 4th. He says of these: "These two are very much alike in tree and fruit.... 'Alexander' is probably a little the larger, while 'Amsden' is the greater bearer. Not that 'Alexander' is at all shy, but 'Amsden' is profusely productive and imperatively needs thinning. Both are of fair size, attractive, and of good quality."—We agree with Mr. B. that ripe peaches in Fairfield Co., O., the first week in July, "is something to be grateful for."

Georgia, Texas, and Florida. The Early Beatrice is too small, while Early Louise and Early Rivers are too late to come in competition with Amsden's June and Early Alexander. Reports from all sections place Amsden's June and Early Alexander as the best so far as tested. Among the many new extra early varieties on trial there may be some superior to these, but I think it would be well to wait until they are fully tested before planting largely of them."

While the matter of early peaches was under consideration we received, on July 21st, from Ellwanger & Barry, of Rochester, specimens of a peach of such fine appearance, good size, and, considering its northern locality, marked earliness, that we had a sketch of it made, and asked for further particulars. This variety seems to be of sufficient promise to warrant the engraving here given. The name "Waterloo" has been given to this peach, as it originated in a private garden in a town of that name in Western New York. It was first brought to the attention of Ellwanger & Barry last year, when they were so much pleased with it that they bought the tree and commenced propagating from it. The first fruit was picked on July 14th last, and on the 19th the fruit was over ripe, this being earlier than the Alexander and Amsden in neighboring gardens. The following description is by the skilled pomologists who sent us the specimens:

Size—Medium to large; for an early peach very large—specimens measuring nine inches in circumference, and weighing five ounces. A peach picked July 14th inst., measured *ten inches* in circumference.—*Form*—Round, with a deep suture on one side from stem to apex; stalk cavity deep; apex slightly depressed.—*Color*—Pale whitish green in the shade, marbled red, deepening into purplish crimson in the sun.—*Flesh*—Greenish white, with abundance of sweet vinous juice; adheres to the stone like Hale, Amsden, Alexander, and all of that class.—*Glands*—Reniform.—*Season* in Waterloo, N. Y., this year, July 14th to 19th, and might have been picked on the 12th.

Messrs. E. & B. have since written that the Waterloo proves to be an excellent keeper, specimens that had been picked a week showing no signs of decay. We had noticed this peculiarity in the fruit that was sent us; after making the journey from Waterloo to Rochester, and thence to New York, the specimens were placed in the artists' hands, and when they returned to us after the lapse of two days, were still in good eating condition. Of course the real value of this peach will not be known until it has been cultivated in other and widely separated localities, but it at present promises to mark a great advance in early peaches—a promise which we trust its future may substantiate.

Preparing for Winter—Repotting

Those who cultivate house plants are apt to postpone preparations until cool nights, if not actual frosts warn them to bring their plants under cover. It is a great mistake to thus delay this work, and those who have heeded our monthly "Notes" do not need our present reminder to attend to it without delay. Plants that have been turned out of their pots and have been in the open ground all summer, often become over-grown, and too large to take up and pot for the window garden; hence we have at various times during the season, advised starting new plants from cuttings, as vigorous young specimens are usually more satisfactory than old ones. Still there will be some that it may be worth while to take up, and these should be attended to at once. When a plant is changed from a pot to the border, the heretofore cramped roots soon take a new start, spreading as if they enjoyed their new liberty, and soon occupy several times their former space, while the upper portion of the plant soon grows proportionately large. When such a plant is taken up in the fall it will have a mass of roots, not only far too large for its former pot, but too large for any pot that one would care to give it. The roots must be cut away to a convenient size, and the top must be reduced also. Here is the point where novices fail; they dislike to part with any of the luxuriant new growth, but

set the plant with all of its top and only a part of its roots in a pot, and expect it to flourish. It may be taken as a general rule in all transplanting, whether with house plants or with trees—the top must be reduced in proportion as the root surface is diminished. Plants taken up from the open ground must be placed in the shade until they recover, and they must also be sheltered from the drying influence of the wind. A large share of window plants are properly kept in pots during the summer, with the care advised in our monthly "Notes." Before these are taken to their winter quarters all the preparatory work should be done. If they do not need repotting, the pots will require washing, and it will be well to remove the surface soil and give a dressing of fresh earth. It is likely that many will be found on examination to require new pots. Whenever the roots have filled the ball of earth and have begun to form a mat on its surface—for when they reach the pot they can go no further, and begin to coil around the ball—then another pot is needed. The examination of the ball is a very simple matter, but it often astonishes a novice to see the ball removed, examined, and replaced, by one accustomed to the operation. To show the manner of removing the ball of earth from the pot, we present on the preceding page two engravings prepared for "Winter Greenhouses at Home," an excellent guide to the inexperienced in window culture. To remove the ball, spread the left hand over the top of the pot, allowing the stem of the plant to pass between the fingers, and with the other hand on the bottom, invert the pot, as shown in figure 1; holding it in this position, give the edge of the pot a downward tap against the edge of a bench, or similar surface, and the ball will usually become loose, and allow the pot to be lifted off, as shown in figure 2. If it does not drop out at the first tap, repeat, giving stronger blows, and on other parts of the rim of the pot. A plant must be very much pot-bound if it can not be readily removed from a pot of the proper shape, by this method. In case this does not succeed, pour a little water around the edge, and allow it to soak awhile; a very bad case may require the use of a case-knife, which is to be run between the pot and the ball, though this will rarely be necessary. After the ball has been examined, put on the pot again, turn it upright, and settle the ball in its place, by setting the pot down with a thump. If the ball is well filled with roots, and they seem disposed to curve around the ball, as if in search of fresh earth, it needs repotting, changing to the next larger size pot. The pot, if an old one, should be clean, and if a new one, it should be soaked in water, until the pores are filled, and allowed to drain off, so that the surface will not be wet when used. Place a bit of broken crock over the hole in the bottom of the pot, put in soil enough to bring the ball up to the proper height, and then having set the ball in the middle, fill in the space between that and the sides of the pot with soil, using a piece of shingle, or something slender to press down this new earth and make it firm, give water, and the job is done. It is well to remove whatever of the old soil will readily come away from the top of the ball.

A New Method of Multiplying Plants.

One Ossenkop, an Austrian, has published a work on, and contrived various appliances for, a method of propagating plants which he claims to be new. The inventor, it appears, has been all over Europe and parts of Asia and Africa to introduce his novelty—for which, no doubt, he receives a consideration. In a recent number of the "*Revue Horticole*," its correspondent, J. B. Weber, gives an account of the method of Ossenkop, which turns out to be not so very new, and it is very likely that it is, after all, an American invention. In 1866, in conversation with that well informed horticulturist, Doct. John A. Warder, we mentioned the difficulty attending the growing of the Delaware and certain other grape-vines from cuttings in the open ground. He remarked that his friend, Wm. Patrick, a nurseryman at Terre Haute, Ind.,

grew such cuttings without difficulty, and would no doubt communicate his method. We accordingly wrote Mr. Patrick, and with the liberality that characterizes a true horticulturist, he at once complied with our request, and gave his plan. Mr. Patrick did not run about the country selling his secret, nor did he put it in a little pamphlet of half a dozen pages and charge a dollar for it. He not only sent it, but added: "If you can make any use of it for the benefit of horticulture, please do so, as anything of this kind should be open to all." Mr. P.'s article was published in the "Horticultural Annual" for 1867, and some time after it was given in substance in these columns. The method is in principle precisely the same as that of Ossenkop, though that person mystifies it by making it appear that certain double-bottomed boxes and other "fanciful applications" are necessary. As this method of striking cuttings may be new to most of our present readers, we give it as a timely article, and insist that, unless the Austrian can show prior publication, the credit belongs to Mr. Patrick. Mr. P. says:

"Before the ground freezes, I make the cuttings, from four to six inches long, with one or two eyes on each. I prefer to have two eyes, as such cuttings seem to be better able to withstand the drouth we are apt to have the last of May or the first of June. The cuttings are tied in bundles of about fifty each, and their lower ends are puddled by dipping them half their length in mud, made of loamy soil, mixed with water to about the consistency of cream. A cold frame has been previously prepared with good sandy loam, but not rich. In this I place the cuttings, *top end down*, and sprinkle in fine earth, so as to fill all the spaces in and between the bundles. The crevices all being filled, sufficient earth is put over the cuttings to cover them about four inches deep, and they are left in this condition until they have been rained upon, and it begins to freeze. I then cover the bed with a mulch of leaves or straw, and over this a shelter of boards. If I wish to plant early in the spring, I remove the boards and mulch, and place a sash over the bed, taking care to leave an opening for ventilation; water is to be given as needed. In about five weeks the cuttings will almost all be found to have formed roots from one to three inches long, while the buds have swollen and are just ready to burst. The cuttings are now in a condition in which they require careful handling, and they should not be allowed to dry. I usually set the cuttings, as they are taken from the frame, in a bucket containing some water, and in this way carry them to the place where they are to be planted. In planting, I set the cuttings so that the upper eye is just below the surface, and press the soil firmly around them. Treated in this manner, the cuttings will nearly all grow, and make very strong vines. If there is no cold frame at hand, another plan may be followed. The cuttings being prepared as above directed, are buried, *lower end up*, and four inches deep, in some place sloping towards the south, with the ends inclining towards the south; they are to be covered with a mulch, in the same manner as described for those in cold frames. The mulch is removed in the spring and the earth exposed to the sun. Cuttings treated in this way will not be quite so early as those in frames, but I think they are about as good. There is some danger that those in frames may get too much advanced before the ground is ready to receive them."

It will be seen this is an ingenious and simple method of applying the heat of the sun as "bottom heat." The lower ends of the cuttings being puddled or "grouted," are in a condition to slowly callus during the winter, and when they are exposed to the sun's rays in spring, the roots are induced to push, while the upper ends of the cuttings are further down and beyond the reach of the heat, and the buds kept dormant. The cuttings are, in fact, in just the condition they would be in the cutting bench—the lower ends warmer than the upper portion. This method can no doubt be usefully applied to other cuttings than those of the vine. With many cuttings, time is essential to success, and this can be allowed by this method more economically than in a propagating house.

Notes from the Pines.

Did you ever notice that towns and cities have their horticultural, as well as their architectural features? If asked what were the striking features of New Haven, Conn. I should say, firstly, its elms (of course), secondly, its abundance of well kept grass, and thirdly, the profusion of

Funkias or Day-lilies.

In a visit to the place in the last days of August, we found it all "ablow" with these pleasing flowers. There is so much confusion about Funkias, that one is never sure of a name, but I took this to be, as seen from the street, *Funkia subcordata*, also known as *F. alba*, *F. cordata alba*, *F. grandiflora*, *F. Japonica*, *Hemerocallis Japonica*, and I do not know by how many other names. It makes a mass of fine green foliage with just above it, large racemes of long white flowers, in the greatest abundance. In nearly every yard and garden, wherever there were any flowers, this was quite sure to be seen. There were Funkias in large clumps, Funkias in large masses, Funkias in rows, and more Funkias—and a most pleasing sight it all was.... I wonder if the

Second flowering of Wistaria

has been so general elsewhere as it has been about here. The vines—I refer to the Chinese species—in July and August produced flowers, and in some cases quite profusely. I suppose that a severe frost we had at the time interfered with the spring blooming, and we have it at this late season to keep the general average good.... It is gratifying to find a plant that one has been somewhat enthusiastic over, and has taken some pains to bring into notice when first introduced, stands the test of several years' cultivation, and fully sustains one's first impressions. This has been the case with the

Variegated Eulalia Japonica.

one of the finest of all ornamental grasses. A row some 40 feet long, and the foliage full six feet high is stately as well as handsome, and a large circular bed on the lawn filled with it, elicits many a prolonged O—h! from passers by on the road.

The Zebra-striped Eulalia

in which the markings are singularly cross-wise, we feared would be disappointing from the lack of strong contrast in the colors, small plants being far from striking. Both these varieties of Eulalia are examples of the fact that we have often noticed—that one can not properly form an opinion of the merits of herbaceous plants until they have become thoroughly established, and have made themselves quite at home in their station.... From the comments in the English journals on the

Fruiting of the Japan Quince,

it appears that this is of rare occurrence there. I refer to the brilliant early-flowering shrub generally called *Pyrus Japonica* with us. Having several specimens that bear regularly, and often profusely, I supposed it did so generally. W. C. Strong, of Brighton, Mass., in an article in "Gardeners' Monthly" for July speaks of having 15,000 seedlings of *Pyrus Japonica*, from which we may infer that the plant fruited freely with him. This gentleman wrote the article above mentioned to announce his experiments with the shrub as a new stock for the pear. He found the buds to "take" on it readily, and the growth so pleased him that he proposes to test the stock on the large scale.... Spring-flowering shrubs are abundant enough, but those that bloom in August and later are so few that I am always glad to add to the list.

The Chaste-tree (*Virex Agnus-Castus*)

is very old, but we rarely see it, yet it is very satisfactory with its abundant long spikes of lavender-blue flowers, and its foliage is also pleasing. With me—not far from New York—it is not hardy enough to become a tree, as the winter kills it nearly to the ground, but a dense mass of new growth comes up every season and flowers most abundantly. Another shrub, blooming at the same season, is

Lindley's Buddlea (*Buddleia Lindleyana*),

which gave me a pleasant surprise by proving itself hardy. It is a favorite shrub with P. J. Berckmans, Esq., from whose extensive collection at Augusta,

Ga., it was received. It was taken up and housed for one or two winters, but the old plant, having grown too large, was left out a few years ago, expecting, of course, that it would be the last of it. To our great surprise it bloomed the next fall as freely as ever, and is now (Sept. 1st) full of its gracefully drooping clusters of dark violet colored flowers. This is but one of a number of similar instances in which I have left out plants usually regarded as belonging to the greenhouse, and found them to be hardy.... "The Meadows," as the vast tract of marsh is called, just back of the Palisades, and which is traversed in one direction by the Hackensack River, and in the other by the Erie Railroad, present a great variety of the vegetation common to such localities. Conspicuous among this is the

Swamp Rose Mallow (*Hibiscus Moscheutos*),

forming in places clumps so showy as to attract the notice of persons usually indifferent to such matters. This is the plant which, some 15 years ago, was offered at a round price as "American Jute," and which met the same fate that has befallen many another new "fibre plant." Still it makes a showy plant for the garden, and was 20 years ago much more common in cultivation, as *Hibiscus palustris*, than at present. The large hollyhock-like flowers are six inches or more across, and usually of various shades of rose-color, though sometimes white; I discovered from the cars one with white flowers with a crimson eye, and one of the neighbors found a pure white one, both of which have been promoted to the garden. The California species, *Hibiscus Californicus*, much resembles this in the form of the flower, which has a white corolla with crimson at the base, but the foliage is quite distinct from that of ours. The

Halberd-leaved Rose-Mallow

of more Southern localities (*Hibiscus militaris*) is a fine garden plant; its stems—five feet or more high—are often purplish, its leaves handsomely lobed, and its flesh-colored flower about the size of our common species.... Is there a handsomer fruit than

Clapp's Favorite Pear

when in perfection? Yet it is one of the most unsatisfactory of all pears. A friend who is given to putting things strikingly, says it is one of those pears that have to be "picked by the clock." If left a day or two too long on the tree it will be sure to decay at the core, and if gathered too soon it will not color and is of poor flavor. It is good when one gets it, but the trouble is to get it. After all there is no pear of that season—middle of August—equal to that beautiful little gem of a fruit, "Manning's Elizabeth."

Blackberries in Indiana.

BY STEELE BROTHERS, LA PORTE, IND.

[The Messrs. Steele have given us from time to time, a report on their Blackberries, in the cultivation of which they are extensively engaged. Their experience shows that it is not well to be hasty in deciding on the merits of a fruit; the "Snyder," which at first did poorly with them, they now regard as a valuable market variety.—Eds.]

We fruited six varieties of blackberries this season, and give our experience. First to ripen is

WILSON'S EARLY.—It is the largest and finest looking herry we have seen. Quality poor, but on account of its size and fine appearance, sells readily at a good price. The plant is tender; were it hardy, it would be our most profitable market variety.

THE SNYDER ripens next, and is the hardiest variety we know of. It has only failed to yield a crop once since we have known it. It is very prolific, the berries ranging from small to medium in size; it ranges second as to quality, and the bulk of the crop ripens within 10 days.

THE KITTATINNY begins to ripen soon after the "Snyder," but does not come on so fast. The crop is about three weeks in ripening. Old bushes well cultivated, will yield as many berries as the "Snyder," but being considerably larger, they will measure more bushels. It ranks first in quality, bringing readily from two to three cents

per quart more in our market than the "Snyder." In large cities the difference would be greater.

THE WESTERN TRIUMPH is about the size of the "Snyder," and of first quality; the bushes are thrifty and very productive.

THE MISSOURI MAMMOTH is not quite so prolific as the last named, but the berries are larger and the quality is excellent.

TAYLOR'S PROLIFIC is very sprawling in its habit of growth. The berries are so much like the "Kittatinny" in size, shape, and flavor, that it is very difficult to tell them apart.

We consider all of these last three worthy of a general trial. They appear to be hardy, though we have not tested them long enough to be certain. The conclusion we have reached, is, that the "Snyder" is most profitable for general cultivation with us. It is the hardiest, and while young, the most prolific; plants set this fall or next spring will bear a good many berries in 1880 and nearly a full crop in 1881. While the "Kittatinny" and "Wilson's Early" set at the same time will have very few berries before 1881 and no full crop before 1882. The "Western Triumph" and "Missouri Mammoth" also bear well the second year.

The tops of the "Kittatinny" and "Wilson's Early" do not live through the winter here more than once in two or three years. For this reason, though we shall not discard them, we shall set more largely of the "Snyder," that we may be sure of a crop every year.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

BY FAITH ROCHESTER.

Fine Flour and Graham.

I am heartily glad of the modern improvements in grinding wheat, which give us flour as fine and white as the old superfine flour, yet far more nutritious. Good millers assure us that the "new process" flour contains an increase of nearly fifty per cent of the most valuable food constituents of the wheat. Bran is the only portion of the wheat rejected by the new process, contains some important elements for human growth, but many doubt whether these are most easily obtained by making bran an article of diet. Moleschott, a German scientist, investigated this subject carefully, and concluded that the use of unbolted flour had been too strongly urged. He says that only persons of very strong digestive powers, and engaged in active life, can digest the bran and appropriate its nutritive matter. Many find the digestive organs greatly irritated by the bran, "and thus undesirable results attend an abundant supply of substances which, though highly nutritious, are digested with difficulty, or not at all."

The author of "Foods," Dr. Edward Smith, gives a similar opinion. He thinks that the coarse bran not only leaves the body, undigested in most cases, but in its progress brings away much that would otherwise be worked up into bodily nourishment. The action of the bran in cases of constipation is well known—a mechanical action sometimes very useful when too "rich" and concentrated food is used, or where sedentary habits render the bowels inactive. But people of average health, leading moderately active lives, as all children do, and using vegetables and fruits as part of their daily diet, have no need of a steady mixture of bran in their food. It has long seemed to me that the instinctive pleasure most of us have in food of fine texture, as compared with that which feels coarse and rough in the mouth, need not be disregarded in the preparation of so important a thing as bread. So when I use graham flour, which is decidedly branry—such as the northern winter wheat makes—I either sift out the bran, or mix it half and half with white flour. But I avoid the sacks of graham labelled "Best white winter wheat," and either get the new process graham, which has no perceptible

bran, or fresh ground unbolted spring wheat. I am speaking of Minnesota grain.

Why use Graham Flour at all?

Because it adds a pleasing variety to our bill of fare. I should be very sorry to banish graham pudding (or mush), and graham gems and crackers from our table. Besides, I do not doubt that the best graham flour—that which has the bran finely cut to pieces and in small proportion to the rest of the flour—is better for the common use of many people who live mostly on concentrated food, or use much meat, cake, and pastry, than bread made of fine flour. Last year I lived close beside a large flouring mill for a few months. It was a mill using the modern "new process" machinery, and grinding the best of "gilt-edged" as well as "family" flour. When I wanted graham, I sent a sack to the mill, and received into it the pure unbolted wheat-meal before it had undergone any sifting process. I could not ask for better graham flour—made as it was from the best Minnesota *spring* wheat. This, however, was not like what I buy in the city labelled "New Process Graham," though I sometimes get the same labelled "Fresh Ground." I seldom use the highest priced "gilt-edged" fine flour. It makes beautiful loaves, and it may be true, as I am told, that a sack of it goes much further "than the common grade flour," but it seems to empty the pocket-book faster, and a friendly miller, who makes both kinds, has assured me that the "grade" or "family" flour, is just as nutritious as ground wheat can be with the simple bran extracted. Certainly the bran we get now-a-days for our cows, is quite different from what we used to get, years ago. It is so cleanly peeled from the wheat as to appear like very insufficient food for any animal unless mixed with corn-meal or shorts. The old-fashioned bran had clinging to the inside of the husk some of the most nourishing food material of the wheat, so that when this was bolted or sifted away from the white flour, the latter was left poor indeed, and deserved the outcry made against it.

Good Gruel for the Sick.

For the first time in my dozen years of motherhood, I have had a child really sick in bed, and unable to be dressed. All about that sickness I shall not tell here, but the patient and his mother have both learned important lessons. The sickness was partially the result of a degree of accidental poisoning; but we shall hereafter be more careful about the times and seasons and temperatures of the swimming baths, that the body may be found in a better condition to resist disease. I believe, with a host of others, that little boys who get interested in swimming, are liable to do themselves great injury by too frequent and too long-continued visits to the water. There was poison in the system to be got rid of, and Nature tried to rid the stomach of its contents, as one of the first intimations of sickness. She did not succeed, and as there was no warm water in the house to aid Nature's efforts, and I had then no idea of the poisoning, I let the child crawl off to bed with the bad stuff unrejected, and for a day or so, I still supposed that he would soon get about. But he would not eat, and after several days of fasting, I began to feel great anxiety about the return of his appetite. I feared that he would become so reduced in strength that we should have to bring him up on beef-tea and broths. But as the days passed it seemed less dangerous to wait patiently for the return of appetite. He lived on water, drinking it often and plentifully in obedience to his own instinct, and I could see that it, in connection with daily sponge-baths, and enemas, was helping him. One morning he asked me with some eagerness if we couldn't have fresh warm loaves of Boston brown bread brought home from the bakery sometimes next winter! Then I knew that the appetite was coming. A few hours later he wanted to know what arrowroot looked like, and what could be made from it, and thought a little cooked thin with milk and sweetened a very little would taste good. How gladly I prepared it, and fed him the few spoonfuls that satisfied him. Now I believed in my heart, all of the time, that the best food he could have along at first, would be gruel made of sifted graham, and seasoned with

creamy milk, such as seems very delicious to me when I am sick. But the last graham gruel he had tasted, had been made of "branny" unsifted graham, and he "never wanted any more." So I had equipped myself with arrowroot, sago, tapioca, and ground rice, having studied the recipes for the sick in Marion Harland's book, and in a work on domestic medicine, which a neighbor lent me. But there was small demand for these after all. After one or two small meals of these prepared in the most simple manner, beef or chicken broth, with bread or crackers crumbled in, and a dessert of ripe fruit—at first grapes (the first thing he was willing to taste), or an orange, and soon a peach or a ripe apple—gave satisfaction, and as soon as he had tried a little graham gruel, made as I like it best, that alone became his favorite food. I have the water boiling vigorously, and turn into it slowly, stirring rapidly, a thin paste of sifted graham flour and water, having previously salted the water to taste. For a pint of boiling water, I should use a small half teacup of sifted graham, making the gruel quite thick. Into this I pour good sweet milk until thin enough for a rather thick drink, letting this milk scald, but not boil, in the porridge. Then I cool it, thinning again so that it can be drunk, with milk—and call it *good*. So does my patient, and it gratifies me to see how eagerly he takes it. The milk is excellent nourishment, and so is the flour used, and though it would hardly support the strength of a laboring man as a steady diet, it is a useful dish where something light and nourishing is needed, especially for children.

Other Food for Invalids.

Oatmeal gruel made in the same way as that of graham flour, is excellent, only it should be cooked longer and with a less proportion of meal to the same amount of water, as oatmeal swells very much in cooking. Corn-meal gruel is not so useful, because it is more heating and less nourishing. Corn-meal needs a very thorough cooking. Gruel made of fine meal should boil at least half an hour, and it is best when one-third white flour is used with the meal, mixed with cold water before putting into the boiling water. Most of the recipes for the sick which I have found in my late search, seem to me very objectionable, on account of the seasoning. Nearly all of these gruels are sweetened with sugar (wholly unnecessary if you have fresh sweet grain, and much more likely to become sour in the stomach), and it seems to be supposed that to be palatable, food for the sick must be spiced with nutmeg or cinnamon, with the addition of lemon juice or wine, or both, while the old-fashioned dread of milk seems to prevail. Modern physicians are advising milk for weakened invalids. I recently read this testimony from Prof. Gairdner, of Glasgow University. He says: "To give wine, whiskey, and beef tea, while withholding milk, is simply, in my opinion, to destroy your patient. And the more wine and whiskey you give, the more sure you will be to destroy your patient soon, because you are thereby poisoning the blood. I believe that infinite mischief has been done in typhus fever, and in all fevers, by giving wine instead of milk. It is a fatal delusion."—As for the spices, they are often the hardest and last thing that a weak stomach can digest, remaining at the last to heat and worry the stomach that needs rest.

Common Weeds made Ornamental.

Under the above title, we last month described the manner of making large downy balls from the common thistle. After it was too late to make a correction, the lady who kindly gave us the information discovered that in describing the matter from memory, she had made an error as to how much of the prickly green cup, or involucre, should be removed from the thistle head. Instead of leaving as much as shown last month, (fig. 2, p. 343), all of the involucre is to be removed, that can be readily cut away, as none of it is needed. A section of the prepared thistle head, with the involucre removed, and the flowers pulled out, is here given in fig. 1. It was stated that the downy ball consists of the hairs or bristles of the "receptacle" or the

bottom of the cup on which the little flowers stand; this receptacle is really the enlarged, flattened end of the flower stalk, and is indicated by *a*, in the figure; as the hairs are attached to this, all of the green and prickly involucre, may be removed without causing them to fall out. We usually test such matters before giving them to our readers, but in

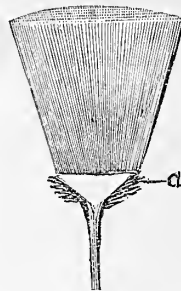


Fig. 1.—THISTLE.



Fig. 2.—DOWN.

this case we had not time. The best thistle for this use, is the common large flowered species; the tall late thistle found in swampy places, has very short hairs, and will not answer. Another lady has shown us how to convert the

Seed Pod of Milkweed

into a most beautiful ornament. There are a number of species of Milkweed (*Asclepias*), some quite early, and others, especially those growing later in wet places; the pods differ much in size, but they have essentially the same structure, and any of these will answer the purpose. The pods break open when ripe by a slit along the curved side to allow the seeds to escape. Nearly all have noticed



Fig. 3.

the beautiful silky down attached to the seeds, each of which has, as in figure 2, a tuft of the finest hairs to allow it to sail off on the air to some distant resting place. The pods are to be gathered when nearly mature, but before they open, as soon as the seeds are full-grown, even before they begin to brown they will answer. If a seed be examined, it will be found that the hairs are not attached to it singly, but if the tuft be separated it will leave the seed all in one piece, the numerous hairs being stuck together at the end. The pod is to be carefully opened; if it will not split otherwise, a knife may be used to merely cut a slit through it. Within will be found a body like that shown in figure 3, which is slightly united to the pod by each end, and is to be detached. It will be worth while to examine this in order to know what we are working with. A botanist would describe it as the *placenta*, with the attached seeds. The placenta, or seed-bearer, is seen at the lower end, *a*, and at the upper end, *b*, but all the rest is closely covered with the flat seeds and their down, save a narrow line, *c*, extending the whole length. The seeds are laid on with beautiful regularity, and overlap one another like the scales of a fish, while the hairs of the down lie close together to form a sort of flattened thread. In order to succeed, the most careful and delicate handling is required; as soon as the seed-bearer is taken from the pod, the lower end, *a*, is to be tied; a bit of soft cord may be used, or what is better, a very narrow ribbon; this is to

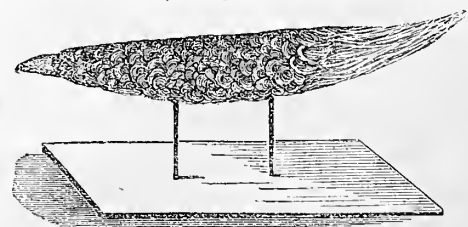


Fig. 4.—MANNER OF MOUNTING.

be tied quite firmly, as the part will shrink in drying. The projecting portion (*b*, fig. 3) at the other

end is to be cut away up to the seeds. In working with this, we found it convenient to contrive some kind of a support in order, as far as possible, to avoid handling. Two very large pins pushed through a bit of thin wood, such as a piece of cigar box, formed a stand upon which the seed-bearer was mounted, as in figure 4, the pins being thrust into the portion (c, fig. 3) not covered by seeds. The next step is to remove the seeds, using the point of a penknife as in sealing a fish, taking care to avoid disturbing the down; most of the seeds will come off with ease, but here and there one may need to be picked off separately. When the seeds are removed, the down will present a beautiful appearance, the closely pressed down resembling, in all but color, the breast of a humming-bird; indeed the arrangement is so regular, and the lustre so exquisite, that a sight of it is worth all the trouble, and one naturally wishes it might be kept in this state. Nothing else is now to be done but to allow the seed-bearer and its attached down to dry. Each tuft of down is overlapped and held by the one next below it, and the last, or lowermost, are tied; each is secured by the end that is, when attached to the seed, uppermost. The natural tendency is to spread, as in figure 2, but one end of each being held by the other tufts, and the hairs being stuck together at the opposite end, each tuft can only spread to form a sort of narrow balloon. As each tuft thus expands, the size of the whole mass will increase wonderfully as it dries; that from a pod of medium size being over two inches through. Should any of the downy tufts stick down and fail to open, they may be gently lifted with a needle or slender knife point. We do not attempt to show the finished affair by an engraving, as it is so delicate that it would be very difficult to do so, and black lines would quite fail to give the lustrous beauty and gossamer lightness of the mass. But the affair is as frail as it is delicate, and will not bear handling; it is best preserved under a glass shade. Such a down-cluster would work in admirably with a design in skeleton leaves, and no doubt many of our tasteful friends will find other uses for such an exquisitely beautiful natural product.

More About Soap-making.

The article in the *American Agriculturist* for July last has called out several letters from our house-keeping friends; many of these are so indefinite as to quantities as to be of little use to inexperienced housekeepers—the only ones needing instruction. The following, by Mrs. G., of Conn., gives the cold method, which is preferred by many. In giving the results of 25 years' experience, she says: "The soap-barrel should be of pine or fir, instead of oak or other hard wood—a fish-barrel, well cleansed, will answer, though the heads of these are not quite thick enough. Put into the barrel five pailfuls of lye, that is strong enough to bear up an egg, and pour to it 28 lbs. of melted and strained grease. Stir it well together, and fill it up gradually with weak lye or water, stirring well as this is added, and stir it daily for a few weeks. It will not be fit to use under three months, although it is of the consistence of nice hard jelly, and looks good enough to eat. It is still better if kept until six months' old. If one prefers to make soap with potash instead of lye, take 20 lbs. of nice white potash, and the same weight of strained grease. Dissolve the potash in 3 or 4 pailfuls of water in the barrel; it may take 2 or 3 days for it all to dissolve; melt the grease and pour to the potash, fill up the barrel with water, and proceed as above directed. Do not use potash soap when new, as it eats the hands badly. The proportions of materials may seem large in the above rules, but strong soap is much more effective in cleansing soiled clothes than the weak, slimy, ill-smelling stuff so often seen, and it will keep good for years. Boiled soap will be fit to use sooner than cold soap, but it is not so nice. The economical farmer's wife should have two soap-barrels, one for the old soap and one for the new, and *never use new soap*. If made of clean materials, and kept closely covered, it is nicer for the finest linen than most of the many kinds of hard soap so much in use, and does not injure the fabric."

"Aunt Peggy" writes a very pleasant letter from Otterville, Mo., in which she says if she "understands anything, it is making soap from ashes." Her instructions for making the lye are useful and explicit, but when she comes to making the soap she "is not particular about the quantity of grease" she uses, and her directions are much less definite. We give her method of managing the leach, or "hopper" as it is called in some parts of the country. She says: "Grease is grease, the world over, and the trouble in soap-making is always with the lye. I first fill the hopper with good strong ashes, that have been well burned, dampening them thoroughly, but not wet enough to drip, and let them stand two or three weeks before the lye is needed. Provide a barrel large enough to hold all the lye the hopper will make; pour water upon the ashes and let the lye run down and fill the barrel. You will find the lye very strong at first, but it will grow gradually weaker until that which comes from the ashes is of not much value. Keep trying the lye in the barrel with an egg; when the egg sinks in the lye, until all is covered but a spot the size of the thumb nail, then it is just right; stop the leach then, whether the barrel is full or not; it will not hurt, but will help the lye to stand awhile."

Household Notes and Queries.

CANNING GREEN CORN.—It having been several times stated in these columns that it was not practicable to can green corn in the family, several have kindly written to show us our mistake, claiming that they have canned it for years. We must still adhere to our original statement, as all those who have sent us an account of their method, do not properly *can* the corn, they merely put it up in jars, *pickled* in Tartaric Acid. This process was described in August last in the "Basket" on p. 287. There is so much testimony in its favor that the process seems worthy of trial.

POISON IN THE BREAD.—Serious cases of lead-poisoning occurring in Taunton, (Eng.) in houses far apart, the attending physician was at loss to account for the trouble, and water, cider, canned fruits, etc., were examined without finding lead. It was at length ascertained that all the families procured their flour at the same mill, and it was found to contain lead in poisonous quantities. An examination showed that large holes in the mill stones had been filled up with lead, which had gradually ground off and the very fine lead had become mixed with the flour, and caused the disease in a serious form.

IVY POISON.—Poisoning by the "Poison Ivy," "Poison-Oak," or in some localities, "Mercury" ("Markery"), the climber botanically known as *Rhus Toxicodendron*, is of such frequent occurrence that there are probably more domestic remedies for it than for any other trouble. The latest we have seen comes from Doct. A. S. Brown, U. S. N., who gives it in the "N. Y. Medical Record." The remedy is *Bromine*, 10 drops of which are dissolved in an ounce of Olive Oil. The mixture is applied to the affected parts three or four times a day—especially on going to bed at night; the oil is to be washed off twice a day with Castile soap. Bromine is a most volatile liquid, escaping through any ordinary stopper, and it will be necessary to have the mixture made by the apothecary as wanted, as it cannot be kept on hand any length of time.

RYE DROP CAKES.—Mix one quart Milk, two beaten Eggs, a lump of Butter as large as an egg, two teaspoonfuls of Cream of Tartar and one of Soda, half a teaspoonful of White Sugar, sufficient Rye-flour to make a stiff batter. Bake in gem-pans.

BOYS & GIRLS' COLUMNS.

Laying in Stores.

Here is autumn with its ripeness, telling us that the season of growth is over, and that the rest of winter will soon follow. Winter brings its work and its pleasures; the Christmas holidays will soon be here, when girls, and

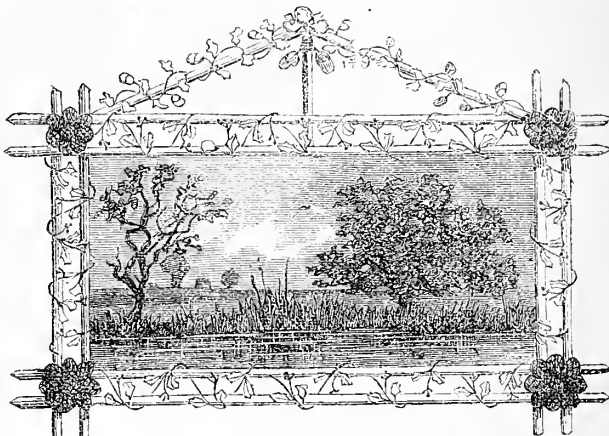


Fig. 1.—FRAME OF CAT-TAIL STEMS.

boys too, will be thinking of presents for the family and friends; then there will be birthdays, for which you will wish some little gift; besides these it is very likely that there may be some fair to which you would like to contribute something. In thinking about presents you will recollect that it is not its cost that makes a gift valuable, and that one worthy of a present would much prefer something you have made yourself to anything you could buy; and you call to mind the many nice little things you could make if you only had the materials to work with, and will regret that you had not thought of it some months ago and provided a stock of things in store. This with most of you will be; if not the last, almost the last month in which you can collect materials to work up hereafter, and we remind you to improve it.

What Shall we Collect?

will be asked by some. That depends in part upon what you would like to use the materials for, and in part upon

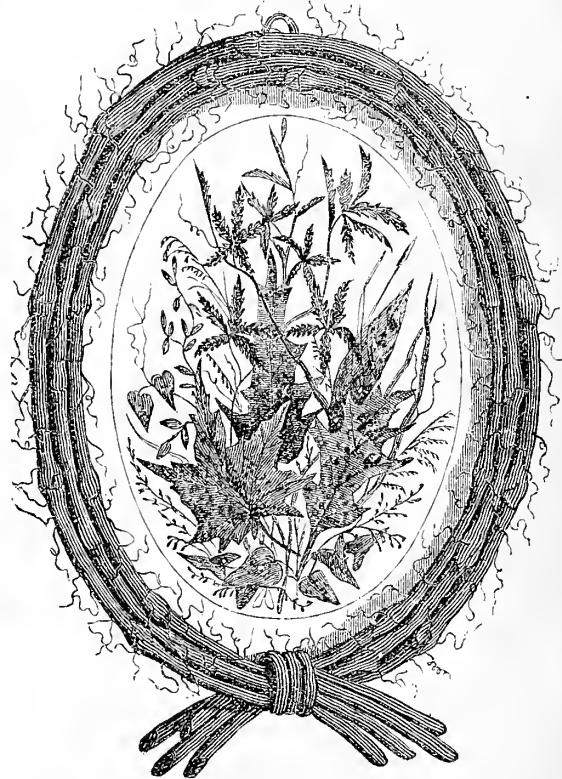


Fig. 2.—FRAME OF GRAPE STEMS.

what you can find. A little ingenuity will convert very common materials into really tasteful and useful forms. Very pretty things are made of spruce twigs: they make neat little picture frames, racks for pens, or even for tooth-brushes, and various other articles. The common White or Black Spruce will answer, but it is often easier to get twigs of the Norway Spruce, which is so often planted for ornament. By cutting a twig carefully here

and there, you can get all that you need without disfiguring the tree. The twigs should be laid away with a board or moderate weight on them to keep them flat, and when dry, the leaves will fall off or come off readily. . . . Even the

Stems or Canes of the Grape-Vine

may be used for various purposes. When the vines are pruned this fall, there will be much cut off that is too small for cuttings, but just what you can make use of. Those who have no grape-vines—and we trust they are but very few—can gather the stems of wild vines. Tie the stems in bundles to keep them straight. In collecting the vine stems leave on the tendrils, and as these add to the beauty of work made of this material, it is well to collect a lot of tendrils by themselves to be added in making up. When either these or the spruce twigs are used, they are first to be soaked in hot water until they bend readily, and when shaped as desired, they must be securely fastened until dry, when they will retain the form to which they have been bent. A frame made from vine-stems is given in figure 2; it may be used for a leaf and fern design, or for a picture. It is well to bend the stems after softening them in water around a block of wood, to serve as a mould, or a dish, or some other article of the right shape will answer. In fastening such work, very fine copper wire and pins of various sizes will be found useful.

The Common Cat-tails

of the marshes could be worked into a variety of forms, did they not shed their down and become useless; but the stems of the Cat-tails are long, straight, and light, while they have sufficient strength for some purposes. Figure 1, shows how these stems are used to build a frame; the places where they cross may be bound by fine copper-wire, and this is hidden by small cones, acorn-cups, or other objects. The space between the stems may be backed with some colored paper; and those who know how to make leather-work, can ornament it with leaves of leather. It will be better to use a thin board the whole size of the frame; mount the picture and border of colored paper on this, and build up the frame around it, using pins or brads to fasten the stems to the board. These are merely given as examples of the manner of working up common materials. A frame or bracket of wood may be made a handsome affair by covering it

With Lichens, or "Mosses,"

as they are often wrongly called—what they are, is told by the Doctor in this month's Microscope talk. These are found on tree trunks, old logs, old fences, on rocks, etc., and may be gathered at any season; it is best to collect them on a damp day, as they then are readily removed, and are not brittle as in a dry time. Spread them loosely until dry, and store until wanted for use. To cover a bracket or frame, first assort your lichens, placing each kind and shade of color by itself, as much taste may be shown in the manner of putting them on. Thick floor paste is used, a coat of it being put upon the wood and the lichen laid upon it.

Leaves, Ferns, Grasses, Etc.,

for making up into little pictures, especially autumn leaves, must be gathered soon, or it will be too late. Grasses to be used for this purpose, as well as the leaves, etc., should be pressed. Some large book, not valued, may be used for pressing, or what is better, as we never like to see books put to such uses—soft newspaper folded in several thicknesses, and the leaves, etc., placed between them and a weight placed on top. To keep the color, especially of autumn leaves, a plenty of paper must be used, which for a few days should be changed every day. Keep the leaves, grasses, etc., under pressure, to keep them in proper shape, until you use them.

The Young Microscopist's Club.

In telling you last month some of the points by which you can know a Fern from other plants, I said that the Ferns belonged to the Flowerless Plants, but I find that I did not say so much about these as I intended. In studying natural objects it is necessary to so arrange them as to bring those alike together. In birds the *waders* form one group, the *swimmers* another, the *birds of prey* still another, and so on. In insects the butterflies are put together, as are the beetles, the flies, etc. So in every branch of science the objects are classified. In plants we have two great series into which all plants are divided;

The Flowering and Flowerless Plants,

and whatever plant you find must belong in one or the other of these. These plants have no proper flowers, and they do not have seeds like the flowering plants. In all the plants that we are most familiar with, the flower is followed by seed, each one having within it a minute plant, or the beginning of one, ready formed, and when the seed is sown a plant will come up; this plant is just what was already in the seed, but increased in size. The little plant in the seed is called the *embryo*, but nothing like this is found in the flowerless plants; it is true that they produce something that answers the pur-

pose of seeds—something which after a while will produce a plant; this, as described last month, is a

Minute Dust, Called Spores.

The part which a spore takes in producing a new plant is too difficult for you to understand until you know more about plants than young people are likely to have learned. So you must take it on trust until you get old enough to look into the matter. In the flowering plants some are much simpler in their structure than others, and we find it the same among those that are flowerless. In the Ferns, for example, there are root, a stem, leaves or parts answering to them, and distinct fruit-dots, while others are much simpler until we come to a mere little cell, or bag, or a simple thread that constitutes the whole plant, and grows and reproduces itself, which is all that larger plants do. Related to the Ferns are

The Horse-tails,

one of which was described in Feb'y last as the Field Horse-tail, its spores making a curious object for the Microscope. Another family of flowerless plants is the Mosses. Quite a number of things are commonly called Mosses that do not belong to the family—even sea-weeds are frequently called "Sea-Mosses." The Mosses have a stem, and distinct leaves, and produce their spores in a separate spore-case. In fig. 1 we have a common Moss which gives a general idea of these plants. The spore-case, *a*, is sometimes called the fruit; the botanist's name for it is *Sporangium*. Figure 2 shows the same

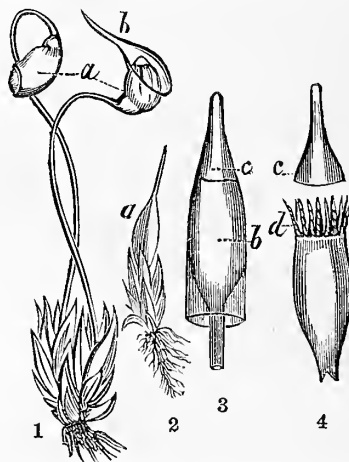


Fig. 1-4.—1. A COMMON MOSS.—2. THE SAME VERY YOUNG.—3. A SPORE-CASE WITH HOOD.—4. THE SAME WITH HOOD REMOVED, AND LID C LIFTED, SHOWING THE TEETH, *d*.

moss when young, before the stem has lengthened upwards and lifted up the spore-case, as in figure 1.

The Spore-Case or Sporangium

presents a great variety in form, size, and other points; hence it serves to classify the Mosses into genera. You will find these plants at all seasons of the year, and very pretty objects some of them are for your Microscope. Figure 3 gives the spore-case of another Moss, much magnified, that you may see the parts distinctly. The case is often with a sort of cap or hood, shown at *b*. This is sometimes very small, and being pushed off early, is not always found, and at others large and very noticeable; in describing Mosses this is called the *calyptra*. The case has a lid or cover (*operculum*) which finally drops off to let out the spores; this lid is seen through the hood at *c* in figure 3, while in figure 4 the hood is removed, and the lid *c* lifted off; in most Mosses the mouth of the case bears a sort of fringe, *d*, which consists of a single row of teeth, or in some cases there is another row inside of the first, forming a double fringe; at first these teeth are bent over towards the center to form a sort of inner covering to the mouth of the spore-case, but they are much affected by moisture, and are often found erect as at *d*. (Botanists call this fringe the *peristome*, which means, around the mouth.) One curious thing about it is, that these teeth are always some multiple of 4, and vary from that number up to 64; they are broad and strong, as in the engraving, or are merely slender hairs

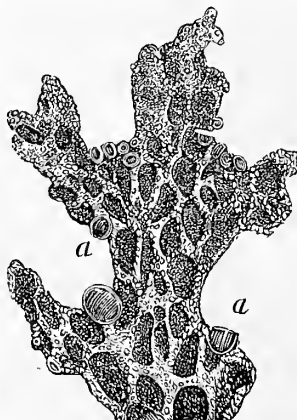


Fig. 5.—A FLAT LICHEN, *Stricta*.

which are sometimes twisted together. The teeth are often handsomely marked, and as they are of pleasing colors they make pretty objects for the Microscope.—

Mosses Vary Greatly in Size.

One of the largest of ours, found floating in northern

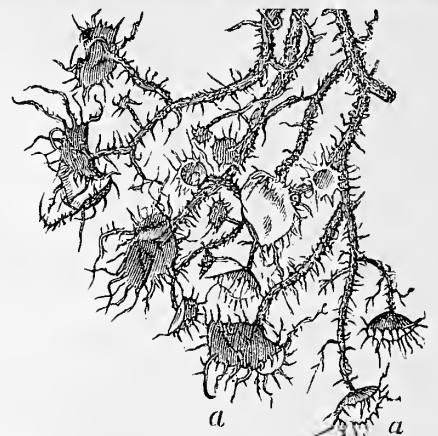


Fig. 6.—A BRANCHING LICHEN, "TREE-HAIR."

streams, is a foot or so long, with large leaves for a Moss; while others are less than a fourth of an inch in height. The most useful of the Mosses is the common Peat Moss, or *Sphagnum*. This is much used for packing plants and other garden purposes. Of course there are many other things about Mosses that a student of them would wish to know, but what has been said, and the engravings, will, I think, allow you to distinguish a Moss from any other plant. . . . I often hear of mossy fruit trees, moss on old fences, and of moss to cover brackets, and to make other fancy articles, and when I see them I find that

They are Not Mosses at All,

but plants of a very different family, the *Lichens*. There is no other name for these plants as a family, and that is perhaps why they are so often called Mosses.

When you speak the name recollect that the *ch* is hard, and that it is to be pronounced as if spelled *li-ken*. These plants have a great variety of form; some are thin, flat, crumpled plates or sheets; others long and slender, like a small cord; others are erect and vase-shaped, or much branched. They grow on the ground, on stones, boards, trees, etc., and have even been known upon glass in the windows of old buildings. The flat Lichens have sunken spots in the surface, as at *a*, *a*, fig. 5. These are "shields," or fruit-dots, and have imbedded in their substance little sacs containing the spores. The most useful of these flat kinds is the Iceland Moss, used in far northern countries as food. In the deep northern woods the "Tree-hair" (*Usnea*) figure 6, is found hanging from the trees, some of it 4 or 5 feet long; this bears its shields, *a*, *a*, at the ends of its branches. Some beautiful Lichens related to this are found on the Pacific Coast. The so-called "Long Moss" that hangs from the trees in a similar manner in the Southern States, is not a proper Moss, but a flowering plant. A common Northern Lichen is the "Reindeer-moss," which grows upon the ground and is the chief food of the reindeer during winter. One of the kinds you will be likely to notice is sometimes called "Coral Moss," and has the form shown in fig. 7; the knobs on the edge of the vase are the fruit shields which



Fig. 7.—CORAL LICHEN.

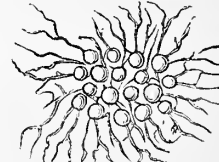


Fig. 8.—MOULD.

are of a Brilliant Scarlet Color and very ornamental. The Lichens present various colors, and some, not showy in themselves, may be so treated as to produce a fine dye. . . . "T. G." Bergen Co., N. J., upon taking a pair of shoes from a closet, found light colored spots on them; some of these spots were as large as the end of a pencil, and others an inch or more across. He examined the spots with his Microscope, and sends a sketch, figure 8, of what he saw, and of course wishes to know what it is. His shoes were simply mouldy, and the spots were the common mould, the same

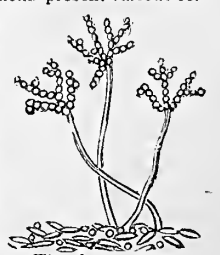


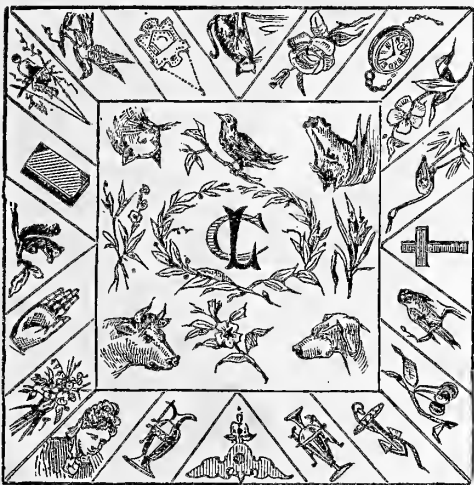
Fig. 9.—MOULD.

that is found upon stale bread and many other articles. This is one of the objects just beyond the power of our Microscope to show satisfactorily. Some of this mould, carefully scraped off and examined with a strong compound Microscope, would appear as in figure 9. The threads at the bottom are the proper plant, and the little bead like clusters are the spore-eases.... Here is a question that I find it difficult to answer—"G. C. W., Minn., asks "can an insect

Feel Pain after its Head is Off"

As insects have no means of expressing their opinion on this subject, we should give them the benefit of the doubt, especially as they have no distinct brain, but a number of brains, or nerve-centers in various parts of the body. It is best to kill them first. All but those with scaly wings—butterflies and moths—are easily killed by dropping them into alcohol; the others may be killed by placing a few drops of chloroform or benzine upon them.

A Crazy Cushion is now very popular among young people. The idea is to combine the work of various persons in one piece of embroidery—to make a sort of worsted album as it were, (not the only kind of album, by the way, that is a *crueful* affair.) A square of canvas is required: this is then divided in the manner shown in



the engraving—an inner square, and an outer one, with the space, or border, between the two squares, laid off in such divisions as the diagram shows, these lines being worked in black worsted. The owner invites her or his friends to work some design, either in one of the divisions of the border, or in the central square, each one choosing a device without reference to any of the others; when a figure is worked in the central square it is not with the regularity shown in the sketch. The more unlike and irregular the different designs, the truer to its name—the more "crazy"—the cushion will be. When the figures are all worked, the filling in is done with any color that may be desired, and the affair is made up as a sofa cushion or pillow. Worsted work is usually regarded as belonging to girls, but when we said above "her or his friends" we had in mind the fact that we have known young men to have crazy cushions, though so far as we have seen, the designs worked upon them is done by the girls. The idea is a rather pleasant one, and when finished, the work is useful as well as pleasing.

Aunt Sue's Chats.

GUM UPON STAMPS.—MINNIE.—The "gum" upon the back of Postage Stamps is not Gum Arabic, but a substance called *Dextrine*, which is prepared from starch—usually from potato starch. If you mix starch with cold water, it will soon all settle, as it does not dissolve at all in cold water. If starch is carefully heated to 450°, and kept at that temperature for half an hour, it will be changed to dextrine, which differs from starch in several particulars, especially in dissolving in cold water. Dextrine prepared in this way is slightly brownish; if the starch is wet with a very weak nitric acid, and dried, it is changed to dextrine at a much lower temperature than when prepared by heat alone, and is as white as the starch from which it was made.

PRINTING POSTAGE STAMPS.—These are printed in a very different manner from ordinary printing. The stamp is engraved on a flat plate of copper or steel. If you examine a stamp with your Microscope or other magnifier, you will see that the engraving is all in lines. These lines are cut in the plate of metal, 200 stamps being engraved on a single plate. The plate is rubbed over with ink, and then carefully wiped off. The ink stays in the lines cut in the plate, while all the rest is wiped off, and when a piece of paper is laid over the plate, and both passed through a strong press, the paper

takes up the ink from these lines. After the colors on the sheets are dried, they are sent into another room to be gummed. After having been again dried they are put between sheets of pasteboard and pressed in hydraulic presses capable of applying a weight of many tons. A girl then cuts each sheet of two hundred in half, with a pair of shears. They are then perforated with the rows of holes to allow them to be torn apart easily. If a single stamp is mutilated, the whole sheet of one hundred is burned. About five hundred thousand are burned every week from this cause. During the process of manufacturing, the sheets are counted eleven times.

"THE CASTLE OF CHILLON."—EVANGELINE.—This castle is situated near the eastern extremity of the lake of Geneva, in Switzerland. It is on a rock surrounded by deep water, and connected with the mainland by a wooden bridge. It is said to have been built in 1120. For many years it was a State Prison. Byron's "Prisoner of Chillon" has rendered it famous. Bonivard, prior of St. Victor, was confined here from 1530 to 1536. It is now used as an arsenal.

HATTIE E. M.—In a "magic square" every column, horizontal, perpendicular, and diagonal, must foot up to the same amount.

P. R. W. will find directions for a "card receiver" (to hang on the wall) in the March Number of the *American Agriculturist*, 1877, page 107.

"JOE LIVINGSTON" sends the following problem. It is not difficult, but as some of you may like to practice your algebra upon it I give it place. "Twelve persons buy a dinner for \$12. The men pay \$2 each for their dinner, the women pay 50c. each for their dinner, the children pay 25c. each for their dinner. Query: How many men, how many women, and how many children were there?"

Below, we give one a little more complicated:

Two friends set out one day to walk,
A had some miles the start;
A took five steps while B took four,
A was so spry and smart.
But A's spry steps were also short,
Three equalled two of B's;
So when B travelled thirty miles,
He'd gained the space with ease.
This is the problem now to solve,
By arithmetic art;
When A and B set out to walk,
How far were they apart.

Thanks for puzzles, letters, etc., to H. E. M., M. Arrowsmith, C. B. R. (the second, only, who answers S. W. W.'s numerical enigma), T. A. C., Amy F., Evangeline, S. T. T., John J. C., and E. W. E.

Aunt Sue's Puzzle-Box.

NUMERICAL ENIGMA.

I am composed of 41 letters:

My 8, 20, 2, 17, 12, 13, 36, 22, is a number.
My 24, 35, 14, 37, 30, 11, 26, is severe.
My 14, 35, 28, 30, means "before."
My 12, 24, 28, 39, 31, is a sylvan god.
My 18, 30, 13, 32, 10, 21, is a small animal.
My 23, 27, 34, 33, is an article of clothing.
My 9, 6, 41, 4, 22, is often used in hunting.
My 23, 19, 40, 8, is what a certain bird does.
My 33, 25, 26, 4, is very useful in cooking.
My 36, 3, 28, is a kind of fruit.
My 5, 16, 15, is liked by most children.
My 23, 20, 8, is a kind of dwelling.
My 1, 7, 37, is a mark.
My whole is a well-known proverb.

WALTER SIMPERS.

ANAGRAMMATICAL SQUARE WORD.

From the sentence "Sweet nuns soon won," make four words of four letters each, that may be so arranged as to form a square word:

Substitutions.

(To fill the second blank, change one letter of the word that fills the first blank—e. g., I saw a — fly from the — of the hill.—*Crow, brown.*)

1. — asked the — to bring him a glass of water.
2. She spilled some — on to her — dress.
3. He saw a — key lying in the —.
4. I am going to — a row on the —.
5. Is it — that that is a maple —?
6. The poor — floundered into the — and could not get out.

CONCEALED NAMES.

1. Madam, you are losing your veil.
2. Do you remember that event?
3. Yes, indeed, it was well ended.
4. That man had a noble presence.
5. Aye, he made liars tremble.
6. Every word he spoke, told!
7. Yes, there is no man like him.
8. Pshaw! I have met them many a time.
9. Oh! do raise that window.
10. In France, silks may be bought cheap.

PL.

Tashy soulertonis moldes desep lewl.

CONCEALED MAGAZINES AND PAPERS.

1. We must look to posterity for redress.
2. Mamma has sold her Alderney cow.
3. Time slips away very quickly when one is happy.
4. Be careful never to oppress the poor.
5. The cat is under the table.
6. This is a char, perhaps you will like it. E. P. B.

CROSS-WORD.

My first is in Kingdom but not in State,
My next is in monserap but not in bait,
My third is in mourning but not in gloom,
My fourth is in sepulchre but not in tomb,
My fifth is in charcoal but not in wood,
My sixth is in handsome but not in good,
My seventh is in ribbon but not in tape,
My eighth is in satin but not in erape,
My ninth is in grouse but not in real,
My tenth is in shuffle but not in deal,
My eleventh is in sovereign but not in king,
My twelfth is in jerk but not in fling,
My thirteenth is in dungeon but not in jail,
My fourteenth is in whirlwind but not in gale,
My fifteenth is in science but not in art,
My sixteenth is in carriage but not in cart:
If the letters are put in proper place
A Shakespearian character you may trace.

RHOMBIC PUZZLE.

Across.

1. Sometimes a confirmation. Sometimes a prayer.
2. Level.
3. Certain animals.
4. To close.

Downwards.

1. This makes men mean.
2. A pronoun.
3. A woman's name.
4. The life of a newspaper.
5. A trap.
6. An adverb.
7. This makes ale a light color.

SCIENTIFIC ACROSTIC.

The initials name part of the atmosphere. The finals include all the metals.

1. A salt which is spontaneously generated in the earth.
2. The characteristic designation of certain microscopic bodies.
3. A crystalline mineral occurring usually in prisms and valued for its polarizing qualities.
4. A metal whose salts are rose-colored.
5. Is the natural state of most metals.
6. Was formerly used for finding the altitude of the sun.
7. A fungoid vegetable production extensively used in medicine.
8. Certain forms of ammonia are thus called. J. A. B.

ABBREVIATIONS.

1. Behead and curtail a color and leave a resinous substance.
2. Behead and curtail a small animal and leave a number.
3. Behead and curtail a basket and leave a small animal.
4. Behead and curtail a plaintive poem and leave part of the body.
5. Behead and curtail a small fruit and leave a quick, smart blow.

ANAGRAMS.

1. Try a thin plum.
2. Find no gruel.
3. Mrs. Nip on time.
4. Entice gallery.
5. So pour music.
6. O see sober rig.
7. In sad cool set.
8. O wise marc.
9. Eject a Saul.
10. Coined beside.

ANSWERS TO PUZZLES IN THE AUGUST NUMBER.

SUNDAY ACROSTIC.

Israel—Red Sea.

I—esacha—R
S—ton—E
R—amoth Gilead—D
A—hushur—S
E—agl—E
L—advice—A

SQUARE WORD.

O P A L
P I N E
A N N A
L E A D

CHARADE.—Candidates.

HIDDEN TREES.—1. Fir. 2. Pine. 3. Oak. 4. Elm. 5. Cedar. 6. Maple. 7. Ash. 8. Beech.

SUBTRACTION AND ADDITION.—1. Account. 2. Counter. 3. Terrel. 4. Cellar. 5. Largo. 6. Go-by. 7. By-wash. 8. Wash-bowl. 9. Bowlder. 10. Dermal.

EASY NUMERICAL ENIGMA.—Robert E. Lee.

SYNCOPIATIONS.—1. Hole—hoe. 2. Fate—fat. 3. Tale—ale. 4. Gor—ore. 5. Steal—teal. 6. Break—beak. 7. Wren—wen. 8. Grin—ghin.

NUMERICAL ENIGMA.—

"'Tis education forms the common mind,
Just as the twig is bent the tree's inclined."



Correspondents will save time, if they will address their letters (to Aunt Sue) to Rowayton, Fairfield Co., Conn., from July to December of this year. But please remember that AUNT SUE is not *Orange Judd Co.*; the latter must be addressed at 245 Broadway, N. Y. City.

The Green Turtle and How It is Caught.

Master Charles S. H., of Neb., and others, who have heard about the Green Turtle, would like to know how it differs from the turtles they have caught, and other matters concerning it. As it is rarely to be seen very far inland, and then only in large cities, no doubt some account of it will interest many. The tortoises and turtles all agree in having the soft parts of their bodies covered by shells; the upper shell is really the flattened ribs, while the lower corresponds to the breast bone in other animals. They reproduce their young from eggs, which they lay in holes in the ground, leaving them to be hatched without their care. Naturalists divide these animals into groups or families, according to certain differences which fit them for various modes of life. One of these families, called *Chelonians* (from the Greek word for turtle), includes those that live in the sea; as these rarely leave the water except to lay their eggs, they are quite different in several respects from those that live on land, or in the rivers. Their feet, or flippers, and



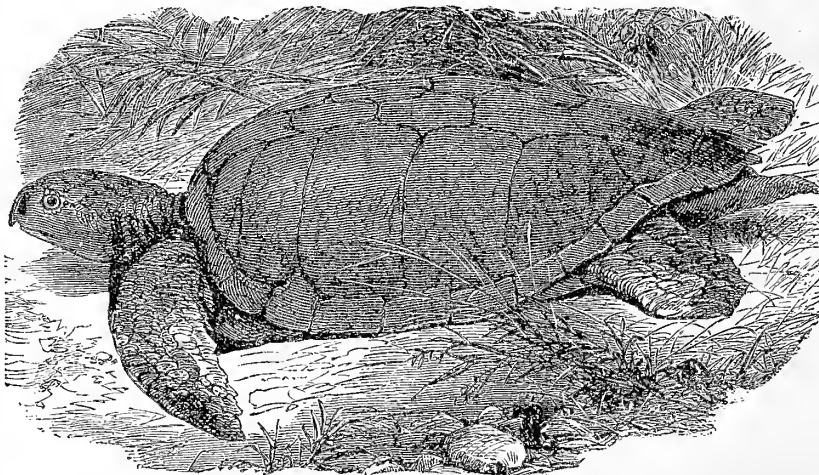
CATCHING TURTLES ON THE COAST OF FLORIDA.

other parts, are well adapted to the "sea-faring life" they lead, and though they move rapidly in the water, they are exceedingly clumsy, indeed almost helpless on land. There are a number of these Sea Turtles besides the one called Green, some of them growing to an enormous size; some live on other animals, while others, like the Green Turtle, feed solely upon plants. The smaller engraving will give you the appearance of this turtle, which varies in size from a few pounds in weight up to 300 to 500 lbs. or more. The under part of this turtle is white, while the upper part is usually a light brown; the name "Green" is said to be from the color of the fat, rather than from that of the animal itself. These turtles are generally to be found in the markets of sea-board cities, where they are kept in tanks of salt water, and fed upon cabbage-leaves and other vegetables. The Green Turtle belongs to the waters of the warmer parts of this Continent; it is especially abundant in the West Indies, and on the coast of Florida; now and then one has been taken in the waters of New York Bay, but such have only strayed or drifted from home. The flesh of this turtle is by many much esteemed as food, but it is chiefly used to make Green Turtle Soup. The turtles are generally caught when they go on shore to lay their eggs, though they are sometimes taken at sea; we have seen the great fellows fast asleep on the surface, and when waked up by the approach of the steamer, get out

of the way in a lively manner; when sleeping thus, they are easily caught in a net. The large engraving, given above, shows how the turtle-hunters catch them, it being a scene taken on the coast of Florida. The turtles leave the water on moonlight nights, and

a soft parchment-like shell, with a little dent at one side; they are about the same weight as a hen's egg, and are highly esteemed as food. Though the turtle neglects her eggs, she is very careful in covering them, patting the sand down upon them with her flippers and then

bringing the weight of her body down over the spot. Though very shy when they first leave the water, when they get fairly at work at their nests they do not care for the presence of strangers. Then is the hunters' time; they can go directly up to the turtles without disturbing them, turn them upon their backs, and they are caught. When thrown upon its back this turtle is unable to turn over; the poor creature is quite helpless, and must remain until it is carried off. It requires some skill to turn over a large turtle, as the animal makes a great struggle, and if one is a new hand at it, he is very likely to be bruised by blows from the powerful flippers, or be blinded by the showers of sand that are thrown up in the struggle. The turtle-hunters have pens placed where the tide will flow into them, where they keep great numbers until they have a chance to send them to market. A great many are sent to Europe. The turtle that furnishes



THE GREEN TURTLE.

after carefully looking to see that there is no danger, slowly crawl about to find a proper place; they then, by working with their hind flippers, make a hole in the sand about two feet across, and each deposits about 200 eggs. Their eggs, like those of our land-tortoises, have

the beautiful shell of which combs and ornamental articles are made, is found in the Pacific and Indian Oceans. The great Loggerhead Turtle is sometimes found as far north as Virginia; when full-grown it weighs 1,500 to 1,600 lbs., but is of little use except for the oil it yields.

"CANDEE" PURE GUM RUBBER BOOTS.

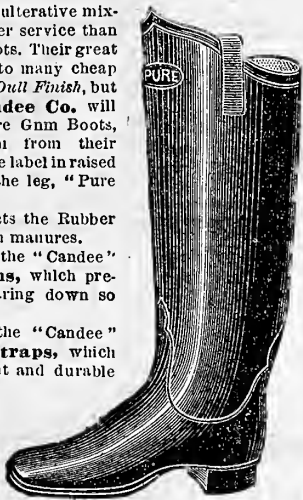
Being free from adulterative mixtures, they give longer service than common Rubber Boots. Their great popularity has led to many cheap imitations having a *Dull Finish*, but this season the **Candee Co.** will **varnish** their Pure Gum Boots, distinguishing them from their common Boots by the label in raised Rubber letters on the leg, "Pure Gum."

The varnish protects the Rubber from the ammonia in manures.

These Boots have the "Candee" Patent **Heel Irons**, which prevent the heels wearing down so quickly.

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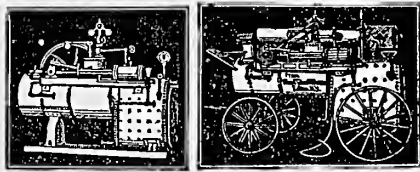
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"The Silverware received, and it gives great satisfaction. Please send following order."—MRS. PARKER EMERSON, Newton, Mass.

"The dozen Forks you sent in May received in due time, and gave satisfaction. Enclosed find \$12 for the following articles."—JULY 1st.—NANCY S. BURNHAM, Auburn, N. H.

"Teaspoons received and give so much satisfaction that I enclose Postal Order for \$5.50 for more of your goods."—MRS. J. T. MULCAHIE, Santa Barbara, Cal.

"Teaspoons received, and satisfactory. Please send one set each Table Knives, Forks, and Spoons."—REV. A. J. STAFFORD, Bishopville, S. C.

"Yours of June 18th, with the Knives, Forks, and Spoons, received in due time, and am well pleased with their appearance. Enclosed find \$20, which myself and neighbors send for the following articles."—MRS. L. LEWIS, Camp Baker, Montana.

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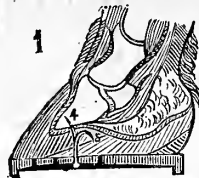
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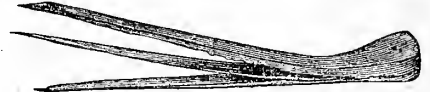
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100 Crescent Seedling	LAPHAM	50 Brandywine Red
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THE ALEXIS (Russian Model).

It is the most extraordinary bargain ever offered in the Gun line. Full nickel silver plate, 7 shot, self-revolving cylinder; wgt., 13 oz., using extra long Rifle Cartridges, and will kill at 100 yards.

These Revolvers were made by the largest manufacturer in the United States for a leading firm in Russia, and were part of the largest contract ever placed in this country for Fire-Arms. They cost over \$5 apiece to make, and the engraving on each one is worth \$2.00. We have bought at forced sale the entire lot for less than the stock alone cost. They are made on honor, the engraving is the finest ever seen in this country, and the workmanship is equal to a Colt's, which it equals in every respect. The stocks are **Ebony**, the most expensive wood that could be used. The metal is *finest English steel*, the barrel being octagonal and superbly rifled its entire length; the cylinder is fluted, as shown in cut. The shape of this Revolver is what is called the **New Russian Model** (similar to Smith & Wesson, 38 calibre, N. M.), giving a firm grip in the hand, preventing the Revolver's throwing up, and producing elegant shooting at long range. This Revolver weighs 13 oz., having an extra heavy and very long barrel, greatly enhancing its value as a target pistol. We guarantee more than satisfaction in every instance, and a better Revolver than \$10 will buy elsewhere, and we will refund the money in every instance where our representation is at fault. Every one should own a good Revolver, and this opportunity will never occur again. We will send this Revolver C. O. D., with privilege of examination at the express office, to any point east of the Mississippi River on receipt of \$1, which will be deducted from the bill; or we will, when the cash in full comes with order, give free a box of extra long target cartridges. (The fact that this Revolver uses the extra long Rifle cartridge makes it doubly valuable, and places it far ahead of all similar ones in the market.) We will send it by mail to any address for 20 cents extra; if sent by mail cash in full must accompany order; we cannot send C. O. D. by mail, neither can cartridges be sent by mail. A complete set of cleaning tools go with each Revolver, and they are packed in an elegant box. Prices of Alexis Revolver, as described above, with **EBONY** stock, \$2.50; with an elegantly engraved Rubber stock (same as on Smith & Wesson), \$3; with a fine \$2 Ivory stock, \$3.75; or with an elegant \$3 Pearl stock, \$4.50. The last Revolver will compare with any \$15 Revolver in the world, and for presentation would make an elegant and beautiful gift. We know that this Revolver is all that we claim for it, and is the biggest bargain we will ever offer. Those who bought our Rob Roy last Spring will have no hesitation in purchasing the Alexis, for big a bargain as the Rob Roy was, this Revolver is far ahead of it. The parts of this Revolver are interchangeable and readily duplicated. Address, **Bay State Arms Co., dealers in Fire-Arms, Sporting and Military, 93 Water Street, Boston, Mass.** Parties in vicinity of New York can see this Revolver at Editorial rooms of the *American Farmer*, 31 Astor House. Preserve this advertisement.

WINTER WHEAT MANURE.

GEO. E. WHITE, "Climax" Superphosphate, prepared with Potash and an extra percentage of Nitrogen for Fall use. For sale at 159 Front St., New York.

BONE.

Sample free on receipt of address.

Just received—a lot of finest quality Texas Raw Bone—superior to any in the market.

A. B. COHU,
197 Water St., N. Y.

JOHNSON BROS. & CO.,

WHOLESALE HOUSE, 600 & 602 Broadway, NEW YORK.
RETAIL HOUSE, 34 & 36 East 14th St., Union Square, N. Y.

OFFER UNUSUAL AND EXTRAORDINARY BARGAINS

in FRENCH and AMERICAN FELT and VELVET HATS and BONNETS, ENGLISH and AMERICAN STRAW GOODS, RIBBONS, VELVETS, PLUSHES, SATINS, SILKS, LACES, FRENCH FLOWERS and FEATHERS, DRESS and CLOAK TRIMMINGS, HOSIERY, GLOVES, LADIES' and CHILDRENS' UNDERWEAR, FANCY GOODS, &c.

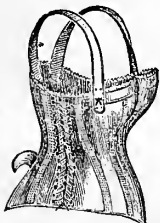
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The latest novelties at the lowest prices.

MME. DEMOREST'S GRAND OPENING of Reliable Patterns of all the distinctive Styles and Exquisite Novelties for the Fall and Winter Fashions. 5 Rue-scribe, Paris; 17 East 14th St., New York, and all the agencies everywhere. Now ready, Portfolio, with 100 large illustrations, 15c. "What to Wear," with full information, 15c. "Quarterly Journal," 5c.; either post free. Paris Exhibition Prize Medal in the Fashion Department was awarded to the Demorest House.

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Skirt-Supporting Corset.



PAT. JUL. 24.77.

Takes the weight of the clothing from the hips and places it on the shoulders, where our physicians say it should be carried, as by any other way the health is impaired and often ruined.

Health is too valuable to lose! Try one of these Supporters and save it! Send waist measure (over dress) and we will send by mail, postage paid, a Sateen Twill Corset and Supporter upon receipt of price, \$1.65. Lady agents wanted to canvass in every town. Exclusive territory will be given them. Send for circulars giving terms.

Chas. A. Baldwin & Co.,
NEW HAVEN, CONN.

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The Latest and Best

KNITTER

For Family Use

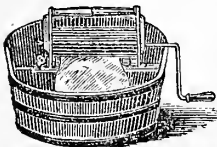
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THE WALKER WASHER.



Thousands of Them in Actual Use. They are a Perfect Success. Simple, Durable, and Cheap.

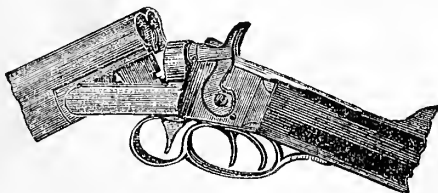
Agents wanted in every town where they are not already being sold. Retail price \$8. Send for circular. Address

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FELT CARPETINGS 20 to 45 cts. per yard. FELT CEILING for rooms in place of Plaster. FELT ROOFING and SIDING. For circular and Sample, address C. J. FAY, Camden, N. Jersey.

STEVENS' PATENT

Breech-Loading Sporting Rifles,



Double and Single Barrel Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunter's Pet Rifles. Special attention is called to our Double Breech-Loading Guns. They are simple in construction and manufactured with great care from the very best material. They are pronounced by experts "the best gun in the market for the money."

Send for Catalogue, J. STEVENS & CO.,
Chicopee Falls, Mass.

"New Automatic"

SILENT SEWING MACHINE.

This machine stands PRE-EMINENT over all others in QUALITY and MERIT, and therefore commands a higher price. Persons seeking THE BEST sewing machine appreciate its NEW AND VALUABLE FEATURES, together with its silence, lightness, swiftness, ease of working, simplicity and durability. It is the ONLY sewing machine in the world with NO TENSION to manage, and is different from all other machines in its principles of operation, being FAR IN ADVANCE of any.

Descriptive Circulars on application.

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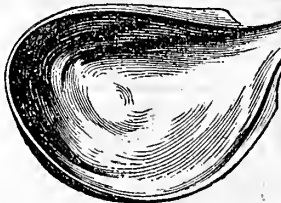
658 BROADWAY, NEW YORK.

Serviceable Silver-Plated Ware.

"Silver Steel" and "Albata" Silver-Plated. Save the retailers and jobbers profit, and buy direct of Manufacturers at Wholesale Prices.

An opportunity is now given to buy any of the silver-plated ware manufactured by us direct. The goods are made of good durable metal and will wear for years.

These are not cheap brass goods, like the so-called "Premium Silver Ware," with which the market is flooded, but are warranted as represented. Remember, brass goods are poisonous!



The entire set (50 pieces).....\$11.00

Liberal discount from these prices to dealers and agents.

Single pieces of any of the above sent post-paid for twenty-five cents.

D. S. STEVENS & CO.,
Manufacturers, Northford, Conn.

J. LLOYD HAIGH, Manufacturer of Steel and Iron Wire, and Wire Rope

Of Every Description.
Galvanized Wire Clothes-line, Fence and Vineyard Wire, and Fence Staples.
Price Lists with full particulars on application.
Offices No. 81 John St., New York City.
P. O. BOX 2,339.

MAYNARD



RIFLES AND SHOT GUNS, CREEDMOOR, MID-RANGE, SPORTING AND HUNTING.

The Best Gun for all purposes ever manufactured. For full description, with price list, address

MASS. ARMS CO., Chicopee Falls, Mass.

PIANO Another battle on high prices **ORGAN** War with monopolists renewed. See Beatty's latest Newspaper for full reply sent free. Before buying **PIANO** or **ORGAN**, read my latest circular. Beatty's celebrated Pianos & Organs, beautiful instruments! Challenge comparison! Rivals are jealous of my success! Most successful house in America! Rosewood Pianos, \$135, 16 stop Church Organs, \$115. Tremendous bargains now ready. Address **WAR** Daniel F. Beatty, Washington, N.J., U.S.A.



Watches Still Lower.

New price list of WALTHAM WATCHES sent free to any address, with description and prices of all grades in fine Gold or Silver cases. I send Watches to all parts of the country, to be examined before paying any money. N. H. WHITE, Newark, N. J.

WANTED—A thorough and practical Farmer, Scotch preferred (married), to take charge of large grain and stock farm in Red River Valley, Minnesota; unexceptional references required. Apply, stating terms and particulars, P. O. Box 301, Minneapolis, Minnesota.

REAL GOOD SHIRTS FOR 50 CENTS.



From the Work Room to the Wearer.

Two, well made, open back, linen bosom, unaltered, yoke shirts, ready to wash and wear, mailed, post-paid, for one dollar, Men's or Boys' sizes. Give size of collar worn, and write name and full address plainly. Address,

NEWARK SHIRT COMPANY,
104 Montclair Ave., Newark, N. J.

One sample shirt sent for 60 cents in currency, or postage stamps.

REVERSIBLE "LINENE" COLLAR. Any size mailed free. Perfect fit. Fine muslin on both sides. Patent Stitch. Dealers sell them. Two Collars in one. REVERSIBLE COLLAR CO., Boston, Mass.

SENT BY MAIL packed in a neat box, 1 doz. Little Gem Nut Picks, for 50c. For 25c, 1 pair of the best little Sewing Machine Scissors and Button Hole Cutter you ever saw. Goods warranted. Address GEO. TURNER, Bristol, Conn.

WEEKS' GRAPE & FRUIT PICKER.

An indispensable article for picking choice fruit and flowers. Send for circular.

A. A. WEEKS, 82 John St., N. Y.

CALCICAKE; or, Compressed Calcimine.

Something New for Walls and Ceilings. Beautiful and Economical. Ready for Use, and can be A...ed by Any One.

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READY FOR USE.

This Paint is indorsed as the best by thousands who have used it during the past twelve years. Beware of imitations. Send for Sample Cards, furnished free by the

AVERILL CHEMICAL PAINT CO.,
32 Burling Slip, N. Y.; 171 East Randolph St., Chicago; 132 East River St., Cleveland; N. E. Cor. Fourth and Race Sts., Philadelphia; 191 High St., Boston.

To Improve the Quality of an Article Enhances Its Value.

Indicating the monetary loss from using any salt but Ashton's in dairies, a correspondent writes that "the losses to the butter makers in his county would have furnished them salt and paid their State and County Taxes."—To use Ashton's Factory Filled Salt in making butter or cheese imparts a fine flavor which improves its quality, and the product commands a higher price than it otherwise would; consequently, its use really puts money in the purse of every dairyman (large or small) who uses it. Butter salted with Ashton's is enhanced in value \$2 to \$5 per hundred pounds, at an extra cost of not to exceed 1 1/2 cent to 3 cents for salt, and cheese is increased in value 50 cents to \$1 per hundred pounds, at a cost not exceeding 1 1/2 cent for salt over the lowest priced salt used in the Dairy. In fact, there is no investment that pays the butter and cheese maker so well as the purchase of Ashton's Factory Filled Salt. It may now be had of reputable dealers everywhere, in sacks of 56 pounds each, as well as in the large sacks of 224 pounds each. If not obtainable of your dealers, address

FRANCIS D. MOULTON & CO., Sole Agents, 105 Water St., New York.

IMPROVED BALDWIN'S AMERICAN FODDER CUTTER.

The Simplest
and Best in
the world.
Has only three
feed gears.
Prices greatly
reduced.

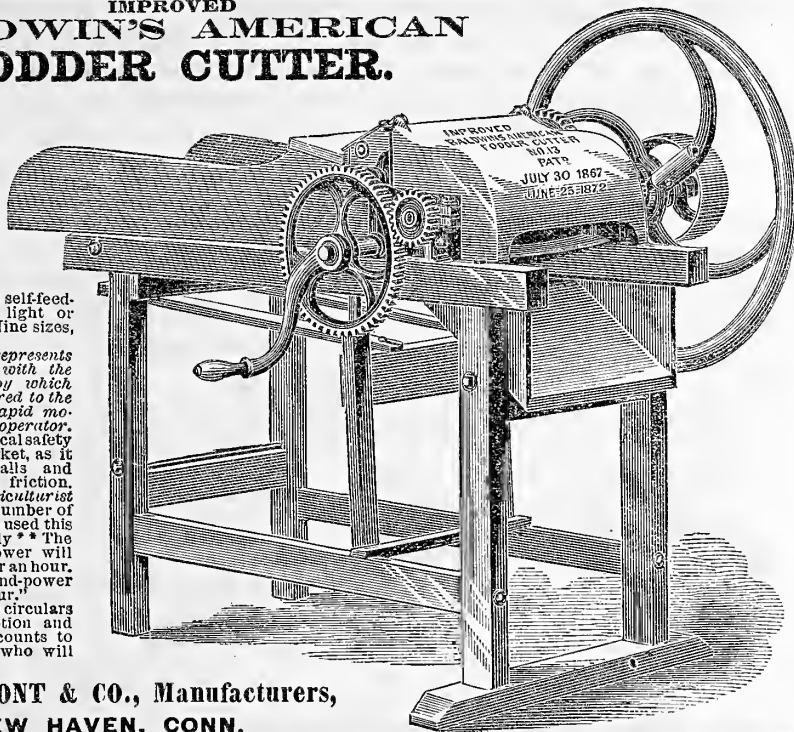
Cuts all kinds of
fodder, hay straw,
and corn stalks with
ease and rapidity.
Each machine cuts
four lengths, and is self-feed-
ing. Can be fed light or
heavy, as desired.—Nine sizes,
for hand or power.

The side cut represents
our Power Cutter with the
Safety Fly-wheel, by which
perfect safety is secured to the
machine while in rapid motion,
and also to the operator.

It is the only practical safety
fly-wheel in the market, as it
is governed by palls and
ratchet, and not by friction.
The editor of the *Agriculturist*
said, in September number of
last year: "We have used this
machine satisfactorily." * * The
largest size with power will
cut two tons of fodder an hour.
The smallest size hand-power
cuts 110 lbs. in an hour.

Send for illustrated circulars
giving full description and
prices. Liberal discounts to
responsible parties who will
act as agents.

C. PIERPONT & CO., Manufacturers,
NEW HAVEN, CONN.



ANIMAL MEAL

For Fowls and Swine.

Made from Fresh Meat, Fresh Bones, and parched and carbonized grains, all reduced to a fine, sweet, highly nutritious meal. Fowls and Swine eat it greedily, and it is so concentrated, that four to eight quarts is a sufficient quantity to mix with a bushel of common meal or other food, and the mixture is fed as you would ordinarily feed common meal. It will make your Hens lay and Pigs grow, the meat and parched grains being very stimulating and healthful, while the lime of the bone is essential for forming the shell of the egg or new bone in the growing pigs. It has been extensively used for five years. Trial Bags, containing 30 lbs., \$1. 100 lbs., \$3. Special Price per ton.—Also for sale Ground Oyster Shells, Chicken Bone, Cattle Bone, Ground Scraps, Wheat Screenings, and a full line of Special Feeds for Poultry, Swine, and Cattle. Send for Price Lists and Circulars, giving full particulars, mailed free.

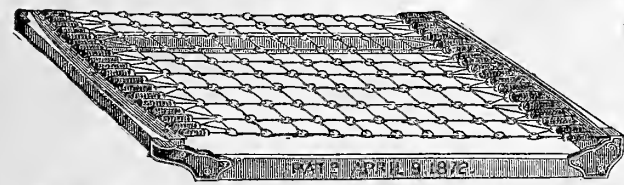
W. H. BOWKER & CO.,

3 Park Place, New York.

43 Chatham St., Boston.

Proprietors of the Celebrated Stockbridge Manures, Bowker's Phosphates, and Importers & Dealers in Agric'l Chemicals.

NATIONAL WIRE MATTRESS.



This is the very BEST and most DURABLE Spring Bed THAT MONEY CAN BUY. Do not confound it with any Woven Wire Mattress. The American Agriculturist says: "We have tried the article made by the National Wire Mattress Co., of New Britain, Conn., and find it to be as nearly perfect as need be."

Delivered to any R. R. Station in the U. S. or Canada, free of charge, on receipt of \$10.00.

Address NATIONAL WIRE MATTRESS CO., New Britain, Conn.

Allen's New American Farm Book...\$2.50

Allen's American Farm Book, (the former edition of the present volume), has been one of the standard farmers' hand-books for twenty years; it is still a valuable book, but as its author, Mr. R. L. Allen, could not give time to its revision, this was undertaken by his brother, Hon. Lewis F. Allen, the distinguished farmer of Erie county, editor of the American Shorthorn Herd-Book. The present edition of the work is greatly enlarged, and full of suggestions from the rich experience of its editor and reviser, and is called the NEW AMERICAN FARM BOOK. Originally by RICHARD L. ALLEN, Revised and greatly enlarged by LEWIS F. ALLEN. Cloth, 12mo.

ORANGE JUDD COMPANY, 245 Broadway, N. Y.

NEW REGISTRY LAW.

This law will go into effect on and after Oct. 1st, 1878, when I shall be enabled to forward to any destination, twenty-four sheets of Embossed Pictures for Decorating. Consisting of BIRDS, BUGS, REPTILES, FERNS, FLOWERS, FIGURES, &c., for \$1.00, and will guarantee a safe delivery and insure all purchasers against loss.

\$1.00 sent by registered mail will receive prompt attention, and goods be forwarded post-paid as registered matter.

OSCAR W. YOUNG, Importer,

No. 60 4th St., Brooklyn, E. D., N. Y.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 369.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.50 per volume.

"Mexican Tomato."—"M., Ag'l College, Texas, forwards the flowers and upper leaves only of a plant from seeds sent by the Ag'l Dept. at Washington, as "Mexican Tomato." It is evidently, as he suggests, not a proper Tomato, but some species of *Physalis*—which one we can not say without the fruit. The Mexicans use, under the name of *Tomatilla* (little Tomato), the fruit of several kinds of *Physalis*, and we cultivate one as the "Strawberry Tomato," or "Winter Cherry." Please send the fruit when ripe.

Spiraea Palmata Elegans.—Last year the English and French journals were enthusiastically praising a plant with the above name, concerning which was made the remarkable statement that it was a hybrid between *Spiraea palmata* and *Astilbe Japonica*. We doubted the possibility of such a hybrid, and the colored plates indicated no greater difference from *S. palmata* than often occurs in sports. Having arranged to get this remarkable production—remarkable in the claims made for it—we were not a little surprised, to read in "The Garden" that "It is simply good for nothing, and the least ornamental of all *Spiraeas*."—Why can't plants grow like the highly-colored pictures, or the still more highly-colored descriptions which those who have them for sale give us in advance?

How Lime is Applied.—"C. S., Jackson Co., Ohio. Lime is usually applied by spreading it dry slacked upon the surface—40 or 50 bushels per acre—and mixing it with the soil by harrowing. It is best spread from a wagon by means of a long handled shovel.

Treatment of a Curb.—"A. J. S., Jefferson Co., Ohio.—A curb is a swelling just below the hock on the back of the leg, and is caused by a sprain of the posterior ligament of the hock. At first more or less lameness results from it. After the tenderness is past, the lameness disappears, but the swelling remains. After a time the soft swelling develops into a hard callus, which is difficult of removal. To treat the soft swelling, take 1 dram of powdered iodide of potassium and dissolve in 7 drams of glycerine, adding a little water if necessary to make it dissolve. Rub this upon the curbs for 10 minutes every day until the swellings disappear or become hard, when blistering should be resorted to under the advice of a veterinary surgeon. "Dadd's Modern Horse Doctor" is a useful book, and every owner of a horse should have a copy of this, or of Prof. James Law's "Veterinary Adviser."

Apple Pomace.—"A. E. E., Worcester, Mass. By composting with lime (5 bushels to the cord) apple pomace will be decomposed and made into good manure in three to six months' time. The lime neutralizes the acid and aids decomposition. The material contains considerable potash and phosphoric acid in the seeds, as well as some nitrogen.

Five Hundred Dollars is too small a capital on which to begin milk farming near New York. So we would advise "P. B.," who "would have to rent a farm, buy a horse and wagon, and feed the first year," not to try it, as the experiment must end in failure and loss. Many people suppose that farming can be carried on profitably without either capital or experience. While this may be possible to a certain extent on new lands, which cost almost nothing, the idea, as a general thing, is wrong, and has caused much loss and many disappointed hopes. One of the chief obstacles to success with the majority of farmers is the lack of working capital. In England, every farmer must have from \$25 to \$50 per acre, while here his working capital is too often represented by a debt in the form of a large mortgage

Ground Feed for Cows.—"T. N. S." In practice, we find a good ground feed for cows to be the following: 1 bushel each of corn and oats, and 100 lbs. of wheat middlings ground together. Although it costs something to grind the middlings with the grain, yet the better quality of the feed and its finer condition, when thus prepared, repay the expense. If otherwise considered, the middlings may be mixed with the meal, by shovelling them together on the barn-floor.

Some Poultry Matters.—"A. G. O. M." The common mixed or mongrel race of fowls known as barn-yard or dunghill fowls, are susceptible of improvement either by careful breeding and high feeding, or by crossing with pure bred cocks. An average half-bred B. Leg horn is better than an average common hen; the cross of pure Leghorn blood is an improvement; the Light Brahma cross gives size of body as well as prolificness of eggs. Light Brahmas are probably the heaviest birds, cocks of 16 lbs., and hens of 12 lbs. being not uncommon. The Dark Brahmas are a fine race, but for some good reasons are not so popular as the Light Brahmas. One good reason is, they are not so hardy or productive.

Salt in a Compost.—Let "C. G. C." try it, and he will learn a good lesson in chemistry. What do we use salt on fresh meat for? Simply to prevent decomposition, and it will have the same effect if put into a compost, which is just the opposite to what is desired. If a good compost is wanted, do not put salt into it, "for the sake of saving the ammonia," as, in fact, it will prevent it from being formed; but spread an inch or so of fresh loam over the heap, which will not prevent decomposition, yet will catch and save the escaping ammonia.

"The National Agricultural Congress" met at New Haven, Conn., on Aug. 27th last, for a three days' session. Whether the death of the President, the Hon. W. C. Flagg, had a disheartening effect, or the meeting was not properly advertised, the attendance was altogether too small to be called "national," or even a "congress," though the few that were present were from widely separated parts of the country. The Secretary, always the most important officer on such occasions, failed to appear, or to say that he could not come. The President was Dr. T. P. Jones, Commissioner of Agriculture of Georgia, and Dr. E. L. Sturtevant served as Secretary. The meeting brought together gentlemen from widely separated points, and, as often happens in such cases, its most useful work was done outside of the meetings in the informal conversations and discussions among the members. We could not see that in the papers presented, or the discussions which followed, the proceedings rose above the level of the average farmers' club. There was the same putting of irrelevant questions, and while the private axe was not conspicuous, a glimpse could be now and then had of the end of the handle. The local committee, while they deserve much credit for making matters pleasant to those who were there, might, it seems to us, have secured a larger attendance by the farmers of New England, and especially of Connecticut. If those present did not increase their knowledge of agricultural affairs, they saw one of the most beautiful of New England cities in its best dress.

Apples from North Carolina.—S. T. Kelsey, Highlands, Macon Co., N. C., sent us a basket of "Carolina Red June" apples, picked from his orchard, Aug. 29th, at which date they had been highly colored for four weeks. These specimens were of the darkest, most intense red, and being of much finer flavor than we have ever known in those raised at the North, gave us an idea of what this excellent early apple can be, when grown in perfection among the mountains of North Carolina.

A Sizable Plum.—Messrs. G. H. and J. W. Hall, So. Glastonbury, Conn., sent us a plum "of the average size," borne by the tree. This plum averages 3 by 2½ inches—not in circumference, but in diameter. The Messrs. H. bought the tree several years ago as a "Pond's Seedling," but the fruit is very different from that, and, as it has not been recognized as a known variety by any of our experts, they propose to call it the "Glastonbury." We suggested to Messrs. H. that this might be a possible instance of bud variation; a single bud upon a Pond's Seedling having sported a view they are disposed to adopt. It is no more strange that a single bud upon a tree should sport in the way of bearing enormous fruit, than it is that a peach bud should sport to produce a nectarine, or the reverse, both having occurred.

Salt of no Value (?) to Animals.—"C. B.," of Hightstown, N. J., writes that his experience teaches that cattle and horses do quite as well without salt as with it. The experience of thousands of others furnishes evidence to the contrary. And even if it were of no special value, it would seem to be a liberal policy to allow animals a taste of salt, now and then, as they relish it so much, and it costs so little. That the desire for

salt is not acquired by domestication is shown by the fact that wild animals frequent "salt-licks" in great numbers, and make long journeys to reach them, indicating that it is a necessity; and it is doubtless a preventive of disease and promotive of digestion.

Salt on Land.—"C. B. M.," Madison, N. J. It is unnecessary to apply salt as plant-food, enough being present in the land, generally, to supply all the demands of the plant. The chief action of salt is to render available the plant-food already in the soil, which was before inaccessible, and it may be beneficial on a soil rich in such constituents, as, for example, a strong clay loam. On the poorer class of soils it may, in the end, be positively detrimental.

A Cow in Bad Condition.—"J. F. G.," Binghamton, N. Y. After having had the teats cut to ease the milking, or after a case of garget, cow-pock, or injury by careless use of milking tubes, a cow would have poor chance of escaping trouble with her next calf. We suggest careful watching when her time approaches; and on the first appearance of heat or hardness in the udder, to draw the milk, and to foment and rub it with a mixture of 7 parts of glycerine and one of iodine, to avoid the use of rich food, and to give an ounce of salt-petre, repeated, if necessary, to reduce fever.

Blood Spavin and Thoroughpin.—"R.," Benton Harbor, Mich. A thoroughpin is a bog spavin which, when the swelling is pressed upon, passes to the other side of the leg. Rest is necessary for a cure, which a high-heeled shoe will help forward. The inflammation should be removed by cold water dressings, and when the heat has disappeared, iodine ointment may be used, to produce absorption. The disease is obstinate, and when it occurs from rheumatism, a permanent cure is rare.

Oil to Prevent Decay.—"W. H. H.," Marlboro, Mass. Pine or other wood painted with boiled linseed-oil will last much longer. If exposed wood is well oiled once a year, it will resist decay about as well as if painted. Crude petroleum will preserve wood, and is much cheaper than linseed oil.

Silver Chaff Wheat.—"G. E.," St. Joseph, Mich. We can not recommend the wheat called "Silver Chaff," for light soils. In a trial with other kinds upon a light soil, this variety was worth nothing. How it may succeed upon a heavy soil is a question for investigation. It is safe never to risk a whole crop with a new variety, however well it may be spoken of elsewhere; the safe way is to sow a small quantity for trial at first. Wheat will not mix in the field.

Niagara Falls—Immense Water Power.—Dr. Siemens says 150,000,000 tons of water descend 150 feet every hour, which represent an aggregate of 16,800,000 horse-power. He calculates that 4 lbs. of coal burned per hour, in producing steam, gives a power equal to that of a horse working an hour; that to pump back the water falling over Niagara in a year, would require 266,000,000 tons of coal, which is more than all the coal used for steam purposes in the world.—As we figure it, then, the water-power of Niagara Falls, if all used, would be about the same as that of 34,000,000 horses, each working constantly for 12 hours a day. As a barrel of water weighs about 263 lbs., the fall of 150 million tons per hour, is equivalent to over 21 million barrels every minute, or 355,000 barrels of water every second!

Turner and Ross' Guns.—An advertisement of this firm appeared last year, after considerable investigation on our part. But because three or four of our readers complained of disappointment, we followed our usual custom, and omitted the advertisement, at considerable pecuniary loss, simply to be sure of being on the right side. The complaints received were looked into, and we believe were all made satisfactory. Messrs. T. & R. assure us that they themselves were deceived in a few of the thousands of guns sold by them, without knowing it at the time, and that they have been, and are anxious to do justly, and give entire satisfaction to every customer. If any others of our readers were disappointed, let them address Messrs. Turner & Ross, at Boston, and we shall be much mistaken if their complaints are not rectified.

Value of Salt-hay.—"L. D. B.," Palisades, N. Y. The feeding value of salt hay was given in an article by Professor Atwater, in the *American Agriculturist* for January, 1876, together with a table of values of many kinds of fodder, and a list of rations of these with various grains, by which comparatively poor fodder might be made equal to the best of hay. These tables are valuable, and should be kept for study and reference.

Save the Eyes—Reading and Writing.—Never read or write with the light shining into the eyes. It contracts the pupil and strains the eyes by the

effort to gather rays of light enough from the printed page to make it legible. Always have the light from the window or a lamp, come over the shoulder upon the reading matter, so that the eye itself can not see the direct light. This will greatly aid the sight and save the eyes. Never lean forward in reading or writing; it compresses the chest and lungs and injures the health. Let the shoulders be thrown back, and have the chest or breast stand well out and free. These simple rules followed, will not only aid the sight, but save one's health and vigor many years, and enable him to read and write much longer at a time without weariness. We always write our letters, as well as all copy for the *American Agriculturist*, upon a tablet held in front as nearly perpendicular as possible and have the ink flow from the pen; while the head is supported against a high-back chair, and the elbows by the chair-arms, so that the mind has no care of their support, but is left free to think. In this position, we can read and write six, and even ten hours or more when necessary, without great fatigue.

Too Much Ventilation.—"E. H.," Lebanon, Del. It is very easy to ventilate a cool cellar too much in the summer time. The warm air which enters, deposits moisture on the cold floor and walls as dew, and the cellar becomes damp and mouldy. It should be ventilated sparingly, and if damp, may be dried by putting in it a bushel of fresh burned lime in a box. This will absorb the moisture and make the air dry. When the lime is slaked down, spread it on the floor and use a fresh lot.

Ashes for Wheat.—"Boy Farmer." Woodashes contain more of the essential elements of plant-food than do the ashes of wheat straw, a large portion of the latter being silica; therefore the wood ashes are a more valuable fertilizer for any crop, wheat included. Any amount, from 10 to 50 bushels per acre, will be found beneficial; on an average soil, probably about 25 bushels would be most profitable for wheat.

Unleached Ashes.—"J. H. K." These, being adapted to any crop needing potash, are useful to nearly all. They give the best results on light, dry soils. The amount to apply per acre depends on the soil and the crop; any quantity, from 10 bushels upward, will result in substantial benefit.

Feather-eating Fowls.—"D. W. S.," Scranton, Pa. The habit of pulling and eating feathers is common among fowls confined. It is impossible to cure the fault when once acquired, and it is best to kill the fowls for table use at first sight, as they quickly teach others to do the same. The cause is doubtless a need or appetite for something contained in the feathers. A mixture of dried flesh and bone, specially prepared for poultry, with a small quantity of sulphur, will act as a preventive. Bits of fresh lean meat, or scraps, or finely powdered fresh bones, will answer. Our fowls, which are regularly supplied with the "Imperial Egg Food," show no such depravity, though very closely confined at this season.

Thatching Roofs.—"N. C. M.," and others. For full descriptions of thatching roofs with straw see *American Agriculturist* for July 1874, and May 1868.

The Angora Goat and its Uses.—"G. A.," Fort Davis, Texas. An article fully descriptive of the Angora Goat was given in the *American Agriculturist* of October, 1876. The market for the wool (called mohair), is quite restricted; one mill that we know of, is in Jamestown, N. Y. There is nothing in the goat or the fleece to make it preferable to sheep, excepting under circumstances in which sheep can not be kept profitably.

Eggs May be Carried Safely. we would say to "T. G. R.," Benton Co., Oregon, a long distance by water, as there is little jar or disturbance. Eggs have been known to hatch after having been brought from Europe to this country. The jar and constant vibration of railroad carriage is injurious to eggs used for incubation.

Peach-Stone Meats Poisonous.—Children, and some grown people, are fond of cracking peach-pits and eating the kernel or meat. The "London Globe" describes the painful death of a boy from eating them, and says one ounce of the kernels contain about one grain of hydrocyanic or prussic acid. We do not know as to the quantity, but this is one of the most virulent poisons known. One grain will kill an adult person, while ½ to ¾ of a grain will generally prove fatal to a child. In case of accidental poisoning, inhaling ammonia (spirits of hartshorn), and applying ice-cold water to the head, and pouring it along the spine, are helpful. The best antidote, when it can be quickly obtained, is to swallow 20 grains of carbonate of potassa, diluted in one or two ounces of water, and immediately after, 10 grains of sulphate of iron (copperas), and a drachm of tincture of chloride of iron, mixed in an ounce of water. The above amounts will neutralize nearly 2 grains of the hydrocyanic acid.

Plants Named.—"H. O. A.," Parkman, O. The "Common," or "Low Mallows" (*Malva rotundifolia*), a frequent, but not especially troublesome weed.—"W. K. C.," Plymouth, Mass. The "Tufted Vetch" (*Vicia Cracca*), one of the prettiest of the Vetches, and sparingly naturalized in the older States.—"J. B.," Venango Co., Pa. Lavender Cotton (*Santolina Chamaecyparissus*), a native of Europe, and more cultivated abroad than with us, for its very fine and silver-gray foliage.

A Sprained Shoulder.—"A. E. A.," Pawnee Co., Kansas. A sprained shoulder will not improve by rest. If some exercise is not given, the muscles will shrink, the sinews become shortened, and the lameness will be permanent. The proper treatment is, to apply some stimulating mixture, such as liquid ammonia, 1 part; olive oil, 2 parts; or camphorated spirit. If there is any heat and tenderness, cold water should be showered upon it by a syringe, or with the spraying nozzle of a hand force-pump, until these symptoms have subsided, when the liniment may be rubbed in. The horse should be walked about gently for an hour or so, twice a day.

"Horse Sorrel."—"J. H. K.," Wis. We know of no weed generally called by this name; the sorrel common as a weed, is often called "sheep sorrel," and this is probably the plant referred to. It is not a difficult weed to subdue, by occupying the soil with better plants. You do not say where it occurs; if in grass lands, encourage the growth by top dressing with the most available fertilizer. The old notion that it indicates a "sour soil," and lime must be applied to neutralize the acid has no other foundation than the fact that lime acts beneficially upon the soil and favors the growth of useful plants.

Feeding Jersey Cows.—"Baltimore." For a moderate-sized Jersey cow milking 10 quarts, and making 1 lb. of butter a day, the following ration of the mentioned food would at least be required: Cut corn-fodder of the best quality, and well cured, 12 lbs.; mixed bran and heavy middlings, 4 quarts; of roots, one peck at noon, cut, and sprinkled with a quart of middlings. It is best to wet cut fodder, mixing with it the middlings and bran.

No Cure for Spring-Halt.—"S. M.," Riverside, Va. "Spring-halt" is the result of a defective nervous action, and is usually beyond the reach of medicine or treatment. Sometimes the affection may become relieved through an improved general condition, but usually, as the horse gets older, the trouble becomes worse, and weakness of the limbs and general debility increases. Nutritious food, tonics, and the best care are palliatives.

Renovating an Orchard.—"J. J. L.," Louisville, Ark. We would not advise sowing grain of any kind. If you can not give it a generous manuring, then sow clover, or cow peas, to be either turned under, or pastured by swine; after this, a good dressing of lime or ashes would be beneficial. If the trees are full grown, or have reached bearing size, they need all the nutriment the soil can afford, and no crop that is to be taken away from the land, should be grown in the orchard.

Lost Teats May be Recovered.—"M. J. G.," Irving, Minn. When from any cause a young cow loses the use of one or more of her teats, or their functions cease, there is probability of recovery, if proper means are used. These are, to rub the affected part of the udder with gentle kneading for half an hour daily, to apply with the rubbing iodine ointment, diluted with twice the quantity of glycerine; to milk the teats in the usual manner at every milking time, and if there seems to be any obstruction in the teat, to inject a solution of one teaspoonful of soda in a teaspoonful of water, and after 10 minutes to milk it out.

Norman and Clydesdale Horses.—"O. H. H.," Mount Airy, Iowa. The differences between the Norman and Clydesdale horses are, that the Normans are generally dark iron, or light dappled gray, and are coarser built animals than the latter, which are generally brown or bay, and are very well proportioned and fine boned. The Normans should not be confounded with the Percherons, which are a purer bred race, finer limbed, and light gray, brown, or bay in color; these two kinds of horses are both natives of France, one of Normandy and the other of a district called La Perche.

The Squirrel Pest is one of the great annoyances of the California farmer, and various are the devices for destroying them. One Mr. Benton takes contracts to clear farms at 9 to 10 cents per acre, according to their size. One farmer declined to pay this price, but was willing to give 4 cents a head for all the squirrels destroyed. He probably found he had not made a very shrewd bargain when Mr. B. drove up to his house with so many wagon loads of squirrels that it took a check of \$500 to pay according to the terms of his agreement.

Parents and Teachers will be interested in the advertisement of New School Books, by Messrs. D. Appleton & Co., which we commend to their attention.

Differences Between Hill and Valley Land.—"P. Y. P.," Phila. It is a mistake to suppose that a greater number of plants can be grown upon sloping land than upon land having the area of the horizontal base of the slope; or that more rain falls upon such a surface, or that more pickets are required for a fence upon such ground. This can be proved by drawing a sloping line with a horizontal base line beneath it, and then a series of lines perpendicular to the base.

Patent Gates.—"J. W. M.," Monroe Co., Mich. If a person has used a gate for 19 years, and can prove it, he cannot be compelled to pay a license for its use on any patent taken in 1865.

Catalogues Received.

NURSERYMEN.

J. W. ADAMS, Springfield, Mass.—Special strawberry list, with directions for culture.

EDWIN ALLEN, New Brunswick, N. J.—A comprehensive list of fruit trees, small fruits, ornamental trees, shrubs, etc., grown at the "New Brunswick Nurseries."

WM. F. BASSETT, Hammon, N. J.—Strawberries, including the novelties.

P. J. BERCKMANS, Augusta, Ga.—Wholesale and retail list from, in every department, the most extensive nursery in the Southern States.

H. H. BERGER, San Francisco, Cal.—Japan Persimmons and other Japanese trees.

CAYUGA LAKE NURSERIES, Union Springs, N. Y.—Offer stock very low to the trade this fall.

J. LEWIS CHILDS, Queens, N. Y.—Is getting to be an extensive purveyor to florists and gardeners, and this fall sends out a full list of hardy bulbs.

JOHN S. COLLINS, Moorestown, N. J.—Price list of strawberries, raspberries, blackberries, currants, grapes, etc., with strawberries as a specialty.

J. DILLON, Bloomsburg, Pa.—Strawberry catalogue, including the "Sharpless."

ELLWANGER & BARRY, Rochester, N. Y.—Send the 23d edition of their Fruit Catalogue, which, besides giving the prices for an immense variety of fruits, including several new ones, is valuable for its information. The same applies to their special Strawberry Catalogue.

H. M. ENGLE & SON, Marietta, Pa.—Circular of New Early Peaches with colored plate of the "Wilden."

FERRIS, MINARD & CO., Poughkeepsie, N. Y.—Send their "Wholesale Nursery Trade List" for 1878-79, which offers a full stock of the standard sorts.

A. HANCE & SON, Red Bank, N. J.—Strawberry Catalogue—especially new and old sorts pot-layered.

T. S. HUBBARD, Fredonia, N. Y.—Wholesale list of general stock. Vines a specialty.

W. W. JOHNSON, Central Lake, Antrim Co., Mich.—Native and other forest trees and tree seeds.

WM. S. LITTLE, Rochester, N. Y.—Semi-annual wholesale price-list of fruit and ornamental trees, etc.

E. MOODY & SONS, Lockport, N. Y.—Wholesale list, with special rates by the car-load, are offered by this, one of the oldest and best known of nurseries.

N. OHMER, Dayton, O., makes a specialty of the "Gregg" raspberry, which receives strong testimonials from some of the leading growers.

WILLIAM PARRY, Cinnaminson, N. J.—Several lists setting forth a number of novelties in small fruits.

E. B. RICHARDSON, Geneva, N. Y.—Wholesale trade list of general stock.

E. P. ROE, Cornwall-on-Hudson, Orange Co., N. Y.—As usual makes his catalogue something more than a mere price list, with his notes and comments. His new gooseberries heretofore have been exempt from mildew, and we should not have known that they did otherwise this year, had he not published the fact himself.

HENRY S. RUPP, Shiremanstown, Pa.—Supplemental list of fruit and other trees at greatly reduced rates.

STEELE BROTHERS, La Porte, Ind.—Small fruits and cuttings of the same.

THE CO-OPERATIVE NURSERY & FRUIT CO., of Los Angeles, Cal., make their bow to the public with "500,000 first class healthy, well-grown Orange and Lemon trees." We recognize some familiar names in the "company," which makes such a numerous bow.

F. TROWBRIDGE, Milford, Conn.—Special catalogue of cranberries.

E. & J. C. WILLIAMS, Montclair, N. J.—Devote themselves to small fruits. Among the novelties is the "Montclair," a new raspberry of their own.

SEEDSMEN, FLORISTS, AND BULB DEALERS.

The general seed catalogues are not usually ready before February, but most dealers issue a full list for new bulbs, and other articles in season. Neither is it the usual time for florists' catalogues, and we place the few that have come to hand, with the seedsmen's lists.

B. K. BLISS & SONS, 34 Barclay street, N. Y.—Their "Autumn Catalogue of Flowering Bulbs and Small Fruits" contains 72 pages, is fully illustrated and enumerates a wide variety of things appropriate to the season.

WM. H. CARSON, 125 Chambers St., N. Y.—A full assortment of bulbs; seeds for the season and small fruits.

L. B. CASE, Richmond, Ind.—His "Botanical Index" besides serving as a catalogue, gives interesting items about plants.

WM. MORTON & SON, Allen's Corner (near Portland), Me.—Florists' stock in variety.

ARNOLD PUTZ, Jacksonville, Fla.—Native and other plants, dried grasses, etc.

AVG. ROLKER & SONS, 44 Dey St., N. Y.—Importer of Holland Bulbs, Flower-roots, and Florists' supplies.

GEORGE SUCH, South Amboy, N. J.—Issues his catalogue of stove and greenhouse plants, which is pleasant to look upon for its neatness, and satisfying in the rare excellence of the stock. For the first time, Mr. S. issues a special Bulb Catalogue, handsome enough to be the companion of the other.

J. M. THORBURN & CO., No. 15 John St., N. Y.—Besides a full assortment of the usual kinds of hardy bulbs, a very large list of the rare sorts and greenhouse bulbs.

JAMES VICK, Rochester, N. Y.—Sends his "Floral Guide" for Autumn, and as usual it is full of good things.

LIVE STOCK.

E. F. BROCKWAY, Ainsworth, Iowa.—Poland China Hogs and Poultry. Also Artichokes to feed the pigs, and evergreen trees for shelter, (we suppose).

JOHN S. COLLINS, Moorestown, N. J.—Catalogue of Jersey Red Swine.

BENSON, MAULE & CO., Philadelphia, Pa.—This firm are extensive dealers in blooded stock, including Jersey, Guernsey, Ayrshire, and Shorthorn cattle, and the popular breeds of sheep, swine, and poultry. They combine in their large, illustrated catalogue, announcements of their seed and plant business. It is said that the sales of this concern are rapidly increasing—a pretty good indication of the way they treat their customers.

"RIVERSIDE FARM," owned by C. B. Matlocks, Portland, Me.—Mr. M. makes a specialty of Berkshire Swine, Coltshead Sheep, Bronze Turkeys, Pekin Ducks, and Light Brahma Fowls. Many of his sheep and swine have long pedigrees, as set forth in his handsome catalogue.

GEO. G. MAXON, Schenectady, N. Y.—The "Riverside Herd" of Shorthorns have some choice blood in them, if an illustrious ancestry can give it.

E. E. HARDIN & CO., Scotia, N. Y.—Breed and offer for sale all kinds of fancy poultry.

J. T. STRONG, Lansing, Mich.—Deals in fancy fowls, rabbits, including the pretty Angora and English varieties, Guinea pigs, etc.

M. B. ROWE, Fredericksburg, Va.—Offers eggs for hatching, and Jersey and Ayrshire cattle for sale.

T. L. MILLER, Beecher, Ill.—Is a strong advocate of the Herefords as beef cattle, and claims their superiority to any others, even the widely popular Shorthorns. He sends some fine looking pictures of his favorite cattle.

IMPLEMENTS AND MISCELLANEOUS.

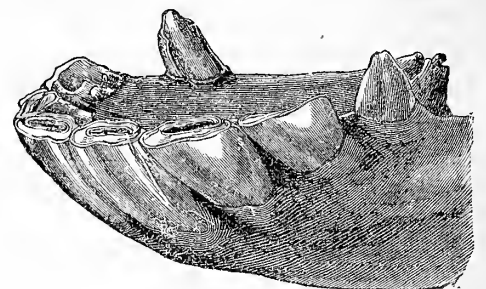
CLOUGH REFINING COMPANY, Cincinnati, O.—This company offer machinery for refining sorghum syrup and sugar by a special process, which meets with general favor, to judge from the testimonials of chemists and cane growers, given in their pamphlet.

DAIRY SUPPLY CO., No. 15 Murray street, N. Y.—Make a specialty of the Pendulum Churn, "The Monitor," and set forth its merits in a pamphlet which will interest butter makers.

THE BRADFORD MILL CO., Cincinnati, O., manufacture grist-mills which seem to be well liked by those who use them. Their "improved portable mills" they consider equal to any, and take pardonable pride in extolling the excellence of their machines.

A. J. FINNIGAN, Minneapolis, Minn., offers one hundred to five hundred dollars for a better butter package than his "air-tight butter package."

DR. M. H. WINNERBENER, Chicago, Ill., has just invented a "combined cultivator and irrigator," which at least has the merit of novelty. He has the good judgment to quote from the *American Agriculturist*, in support of irrigation as a practice.



JUST PUBLISHED.

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By A. LIAUTARD, M. D., V. S.

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In this "Chart," which is fully illustrated and printed on card-board, making a handsome sheet for framing, much valuable information is given in a concise and intelligible way, enabling one to determine the age of Horses, Cattle, Sheep, Dogs, and Pigs. It is what has long been wanted and often inquired for by stock breeders, and one of these Charts ought to be hanging in sight of every man who has anything to do with the management of domestic animals. The size of the Chart is 21½ x 23½ inches. It will be sent by mail, post-paid, on receipt of price, \$1.00.

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This engraving exactly represents the machine with the box cover off.

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Grover & Baker machine. It is made of the best material, always hold the high and distinguished place ever accorded to true worth and merit. Ladies, this is the greatest offer ever made to you. The number of machines which we can offer is limited, and we must receive your order at once as we cannot promise the machine after 60 days from the date of this paper. Every machine is in perfect running order, carefully boxed, and delivered FREE aboard cars or steamer. It can be sent by express or freight to any part of the world. On receipt of \$5 we will send it to any place east of Ohio or north of Virginia, C. O. D. for balance due. If it is to be sent as freight payment in full must accompany order. Remit by Registered Letter, Post-office Money Order, or Bank Check. Perfect satisfaction and a complete substantiation of every statement made guaranteed, or money refunded. Write your address plainly; be particular how to ship, by freight or express; don't fail to do this. Address, The Turner Manufacturing Co., 93 Water St., Boston, Mass., U. S. A. Do not conflict this new and latest improved \$70 machine with an old-fashioned noisy one advertised in some papers for a less price. ORDER AT ONCE. N. B.—Each machine is mounted on patent castors, for which nearly all other companies charge extra, and complete instructions (explicit enough for a child to understand). When the payment in full comes with the order we will give FREE three hemmers, one braider, one friller, one quilting gauge, one gauge and screw, and one embroidery plate. These will not be given free when the machine is sent C. O. D. or otherwise than Cash with order. For our reliability, refer to any editor in our city.

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25 FASHIONABLE CARDS, no two alike, with name, 10c. 25 Scroll, with name, 10c., post-paid. **GEO. I. REED & CO., NASSAU, N. Y.**

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50 Richly perfumed Cards, no 2 alike, name in jet, 10c.; with Case, 13c. 25 Murphy Temperance Cards, 20c. **F. W. AUSTIN & CO., North Haven, Ct.**

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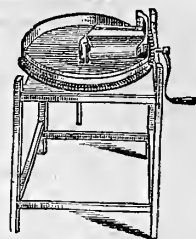
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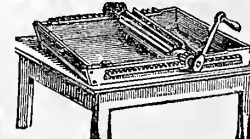
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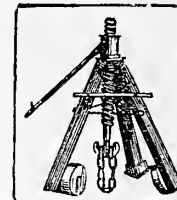
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Send for Circulars giving particulars.

The Chamberlin Screw Stump Machine,



after 10 years test, has proved its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of \$1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Discing Plows. For Particulars, Prices, etc., address **THE CHAMBERLIN MFG CO., Olean, N. Y.**

CORN HUSKER.

No cold or sore fingers, if used with gloves or mittens. Can be used without gloves or mittens, if desired. Will last a life time. Taken 6 Premiums. One sample 25 cts.; two for 45 cts.; 5 for \$1.00.

CITY NOVELTY CO.,

108 S. 8th St., Philadelphia, Pa.

"City Novelty Co. Morrisstown, Pa., Oct. 10.

Gents—Please send me 100 Huskers at once. They sell like hot cakes. Was out about 3 hours and took orders for 25 to deliver to-morrow. Please hurry; will send more orders soon. Have tried the husker; they do all you claim. Met one Farmer who had one and wants another, if he has to pay \$1.00 for it.

J. H. WARNER, Morrisstown, Pa.

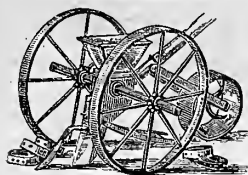
Wm. Dillott

STEEL PENS,

SOLD BY ALL DEALERS.

No. 91 JOHN ST., NEW YORK.

HENRY HOE, Sole Agent. JOSEPH GILLOTT & SONS.



The Monitor Seed Drill.

This is the most complete and positive Seed Drill ever invented. It is radically different from and superior to all others. It is the **only** machine which measures and drops the seed with a positive motion, and exactly the same amount at each foot or yard. It has been tested by 5 years' use in Massachusetts, and was awarded the highest prize at the "Centennial." The "Monitor" has been thoroughly tested during the season of 1878, and heartily endorsed as a **First Class Machine** by Professor Geo. Thurber, of New Jersey, and by Jas. Vick, of Rochester, N. Y.

Agents Wanted.—For full descriptive circular and testimonials, address THE MERRIMAC MACHINE CO., Newburyport, Mass.

ADAMS' PATENT SELF-FEEDING POWER CORN SHELLERS.

Strong, reliable, thorough in all parts of their work, (shelling, separating, cleaning, and elevating.) Perfect self-feeders, and best machines for mill and warehouse purposes, as well as for farm and plantation. Their superiority attested by twenty years' use in the heavy corn-growing sections, during which time they have received first premium at all State and World's Fairs wherever exhibited.

MADE BY THE

Sandwich Manufacturing Co.,

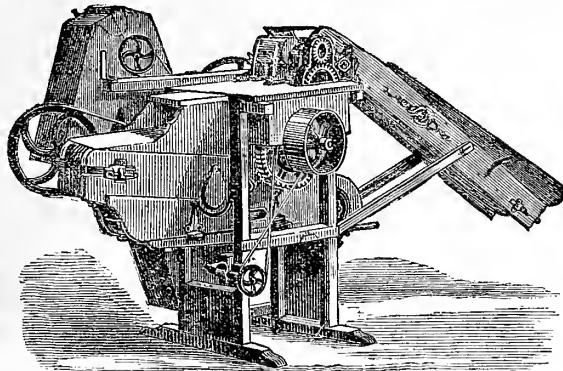
Sandwich, DeKalb Co., Ill.,

Who are also makers of

The Best Hand Corn Shellers in the Market.

Send for Circulars.

These Machines will be on exhibition at leading State Fairs East and West.

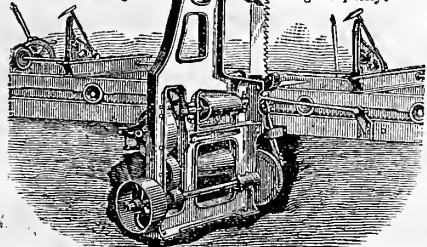


CHICAGO-ENG.-CO.

Portable Mulay Saw Mill,

With improvements recently made is unequalled as a neighborhood mill. It can be run by either steam or water power, and is especially adapted to the engines used for threshing.

It may be operated by either two or three men, and will cut as much lumber in proportion to the power and number of hands employed as mills of larger capacity.



It makes smooth and even lumber, leaves no stubs, and will cut any sized log up to four feet in diameter. It may be transported from one locality to another and re-erected for sawing in from two to three days, and can be made profitable in localities where there is not sufficient timber to justify the erection of a large mill. Send for descriptive circular, price, etc., to CHANDLER & TAYLOR, Indianapolis, Ind.

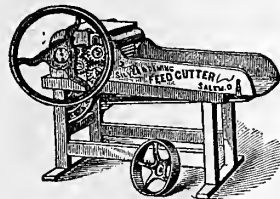
A WANT SUPPLIED.

I have invented and tested a portable, self-supporting Truss Fence. Can be made under cover, costs 20 cts. less per panel than common board fence. No patent on it; free to all. Send 25 cts. for illustrated Pamphlet, with full directions for making. Address

WALDO F. BROWN,

Box 75. Oxford, Ohio.

The Silver & Deming Feed Cutter,



Celebrated for its great capacity, ease of running, and its adaptability to all kinds of work. Our Power Cutters are fitted with an IMPROVED SAFETY FLY WHEEL, and in the event of iron or other hard substances getting into the feed the Fly Wheel revolves, but the knives stop, thereby securing safety to the machine and to the operator. SEND FOR CIRCULAR.

SILVER & DEMING MFG CO., Salem, Ohio.

STEDMAN & CO.,

MANUFACTURERS OF

ENGINES, SAW MILLS, SHAFTING, PULLEYS, and HANGERS. HAY and COTTON PRESSES.

Power Corn Shellers and Cleaners. AURORA, INDIANA.



FARM GRIST MILL.

The Grinding parts are STEEL. It is adapted to all kinds of horse-powers, and grinds all kinds of grain rapidly.

Send for descriptive Circular. WM. L. BOYER & BRO., 2,101 Germantown Ave. Philadelphia, Pa.,

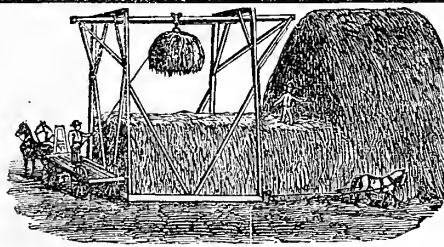
Nichols, Shepard & Co.,

BATTLE CREEK, MICH.,

Makers of the Original and only Genuine "Vibrator" Threshers, Mounted Horse Powers, Steam Thresher Engines and Steam Outfits complete. Illustrated Circulars sent free.

HEEBNER'S HORSE POWER PATENT LEVEL TREAD AND SPEED REGULATOR.

Heebner's Improved Threshing Machines. Send for Illustrated Circulars to HEEBNER & SONS, Lansdale, Mont Co., Pa.



Use the Anti-Friction Hay-Carrier,

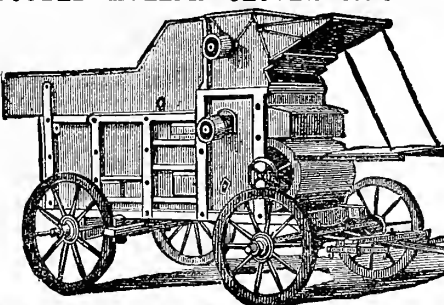
For elevating and conveying Hay, Grain, etc., in barn, bar rack, shed, or field. It elevates perpendicularly and conveys horizontally any desired distance. No trouble about getting over high beams and to the end of deep mows, or to the top of high stacks. Thousands are now in use. Five tons have been stacked and the frame moved in 45 consecutive minutes. Fifty tons have been stacked in a single day with this Frame and Carrier. Send for Circular "2" to U. S. WIND ENGINE & PUMP CO., Batavia, Ill.

Galvanized Cable Fence Strand.

The only wire fence that stands the test of time.

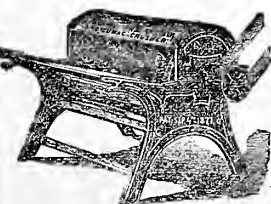
P. S. JUSTICE, 14 N. 5th St., Phila., Pa.

THE CELEBRATED VICTOR DOUBLE HULLER CLOVER MACHINE.



THE BEST IN THE WORLD.

NEW CORN STALK AND FODDER CRUSHER.



Price \$40.00 and \$50.00 each. Send for descriptive catalogue and price list of the above machines.

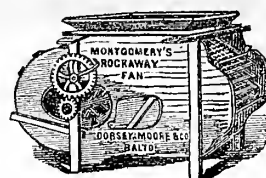
HAGERSTOWN

Agricultural Implement Manufacturing Co., HAGERSTOWN, MD.

Montgomery's Imp. Rockaway Fan!

210 Premiums.

15 Silver Medals.



PATENTED DEC. 29th, 1868. DORSEY, MOORE & CO., 32 S. Calvert St., Baltimore, Md., Manufacturers and Dealers in Agricultural Implements.

CIDER PRESSES, Apple Graters, Elevators, Etc. BOOMER & BOSCHERT PRESS CO., SYRACUSE, N. Y.

Big Giant Corn Mill, Every Man His Own Miller.

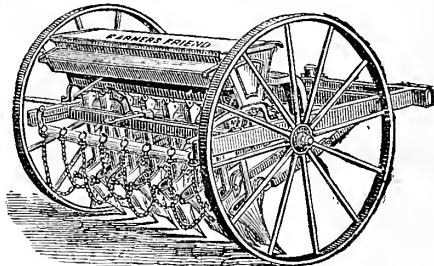


The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully that will grind Shelled Corn fine enough for family use. Grinds twice as fast as any other Mill of same size and price.

MANUFACTURED BY

J. A. FIELD, SON & CO., 922 N. 2nd St., St. Louis.

Farmers Friend Grain



And Fertilizer Drill.

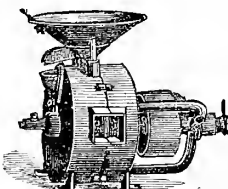
The quantity is regulated with gear-wheels in a CONE, and controlled by a Lever, so there are no loose wheels or movable feeders, and it will sow any grain perfectly and accurately.

It has the best Spring Hoe, and every Drill has a Force-Feed Grass-Seeder, Patent Shifter, and Surveyor free.

Illustrated Catalogues, with description, prices, and a Full Centennial Report, sent on application. Agents wanted in unoccupied territory. Address, stating where you saw this notice,

FARMERS' FRIEND MANUF'G CO., Dayton, Ohio.

HARRISON'S MILLS, NEWLY IMPROVED.

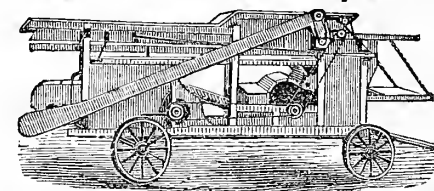


New Standard Flouring Mill. New Standard Corn Mill. Capacity of 12-inch Mill, 2 to 12 bus. per hour; capacity of Light 20-inch Mill, 6 to 40 bus. per hour.

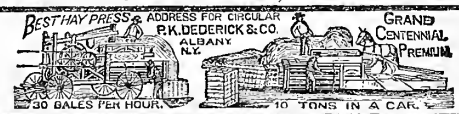
Wholesale Bread, Fine Flour, High Speed, Quick Work, and Economical Milling Fully Established. For illustrated catalogue, describing the Harrison System, Address, Estate of

EDWARD HARRISON, New Haven, Conn. (William A. Foskett, Administrator.)

The Birdsell Clover Separator,



SOUTH BEND, IND.



FOR SALE.—One Double-barrel Breech-loading Central Fire Shot Gun, 12-gauge. Address, FRANK SCHLEY, Frederick, Md.



"DEFIANCE" SPRING WHEAT.—Premium 2.

Good Things Free.

As stated on page 361, the Publishers are preparing an *extensive assortment of Good Things* to be presented to their friends who gather and forward subscriptions for the *American Agriculturist*. We cannot find room for this list in the regular paper, but will mail a *free* copy of the full Illustrated and complete Descriptive list to any one who will send his or her address on a postal card, and say: "For a Premium List."

As many are desirous of beginning to collect subscribers, we insert here a very *few only* of the many articles to be offered.

Names of subscribers can be sent along now as fast as gathered, and all names marked "For Premiums," will be entered to the credit of the sender.

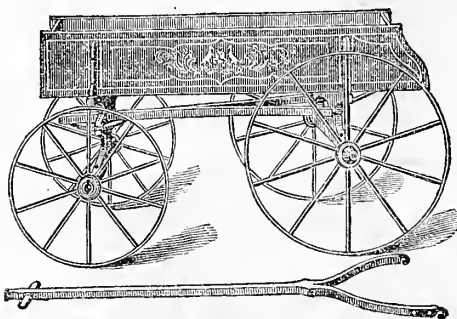
The Premiums will be given for a specified number of subscribers at the regular rate of \$1.50 a year, post-free,

BUT any person sending at least twenty subscribers and upward, at the lowest rate of \$1 a year, post-free, will be allowed to order any premium offered to the amount of 10 cents for each subscriber sent by him; or, for every club of twenty subscribers, at \$1.00 each, an extra copy of the paper will be given, without other Premiums.

Nos. 1, 2.—New Hybrid Spring Wheat.—After a careful trial of six years, Messrs. B. K. Bliss & Sons, who are known as one of the most reliable seed houses in New York City, offer to the public the two varieties of Spring Wheat, the **Champlain** and the **Defiance**, which we present as Premiums, feeling assured that they will be *valuable acquisitions* to the wheat-growers of the country. We have seen specimens of both varieties, raised in widely separated portions of the country, and they appear fully to sustain what is claimed for them. Premium No. 1, the **Champlain** Spring Wheat, was produced in 1870, by Mr. Pringle, in his endeavors to unite the remarkable hardiness of the Black Sea with the fine and superior quality of the Golden Drop. Several varieties were the result of this hybridization, from which this one was chosen, as realizing the end in view, showing greatly increased vigor and productiveness over both its parents. A careful selection from this for the past seven years has now fully established its character, and we have a wheat bearded like the Black Sea, with the white chaff of the Golden Drop, free from rust and smut, yielding a lighter-colored grain than the former, which makes a flour of *superior quality*. Its strong and vigorous straw, growing 6 to 12 inches higher than its parent varieties, stands erect, frequently bearing even in very ordinary culture heads from 5 to 6 inches in length, containing from 60 to 75 kernels each. We confidently recommend this new wheat as among the earliest, promising to give the grower of this most important crop better results than are produced by the old and "run out" varieties now sown. Four subscriptions, at \$1.50 each, will secure **three pounds** of this wheat, sent post-paid.

Premium No. 2, the **Defiance**, is another variety

of Spring Wheat of the highest promise, the result of a series of experiments by Mr. Pringle in 1871, to incorporate superior qualities upon the hardy stock of our common Club Wheat, by hybridizing it with one of the finest, whitest, and most extensively grown sorts of the Pacific Coast. This variety displays great productiveness, vigor, and hardiness. It is a beardless, white chaff wheat, with heads frequently 5 to 6 inches long, very closely set with large white kernels, frequently numbering 75 to 80 to the single head. Its white, stiff, erect straw, exempt from the attack of rust, its earliness, combined with great vigor and superior qualities, should claim for it universal trial. [See engraving]. Four subscriptions, at \$1.50 each, will secure **three pounds** of this wheat, sent post-paid.



No. 3.—"Our Boys'" Wagon.—

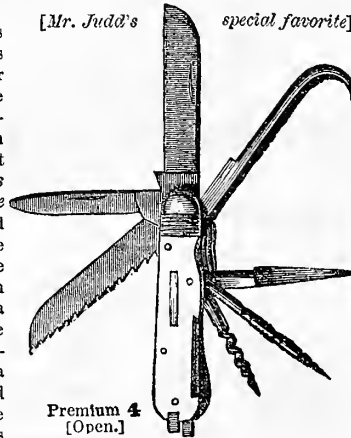
For the use of Boys from 6 to 15 years of age. The bed is 2 ft. 8 in. long, 1 foot 3 in. wide, and 5 in. deep. The wheels are all iron, the spindles also of iron. It is finely painted, a first-rate and handsome wagon, and will carry a weight of 400 to 500 lbs. on a level road. Made by the Silver & Denning Manufg Co., Salem, Ohio. 12 subscriptions, at \$1.50 each, will secure it, or we will supply one for \$8. The freight from the factory in either case to be paid by receiver.

No. 4.—Mutton in Parvo Pocket Knife.—Boys, Read this.

Yes, and the Men, too. Mr. J. D. D. thinks more of this than any other article of twice its cost. He obtained one in London just *eleven years* ago, which he *still carries*, and says it far more than pays the interest on \$100, (2 cents a day,) for, aside from its ordinary use as a double-bladed knife, some one of its "tools" is often worth a "quarter," by being on hand and just the thing wanted in an emergency. He sent an order to England at three different times, but only received much larger, clumsier articles, less effective, and costing \$5 each, and finally learned that the original maker was dead. He then got some English cutlery here to make them, but they did not always succeed in keeping up a supply of first-class articles. We now get them *all right* of the MERIDEN CUTLERY COMPANY, and much cheaper than any imported. (Mr. Judd could find none as desirable while in London on his last visit.)

[Mr. Judd's

special favorite]



Premium 4 [Open.]



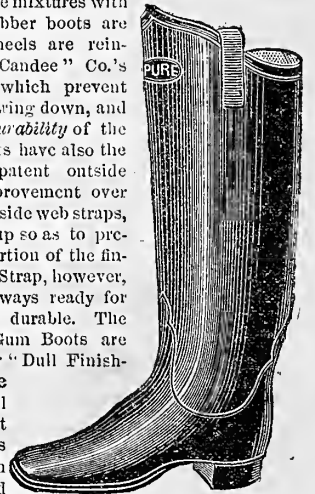
Premium 4 [Closed.]

The *Saw* is double-toothed, and will cut an inch board, saw off a good-sized stick, cut a notch, etc. The *Ik* &

convenient, of course. The *Tweezers* and long *Pointer*, or *Brad-awl*, drawn from the end of the handle, often come into use. The back of the Hook makes a good *Hammer* for tacks, and small pounding. The inside of the Hook forms a small *Nut-cracker*. All close into a compact white handle, the whole weighing only 2 ounces. IT IS A POCKET-FUL OF TOOLS. Seven subscribers at \$1.50 each brings it *free*, post-paid.—[We will send one, post-paid, for \$3.50.]

Nos. 5, 6.—Men's and Boys' Pure

Gum Boots.—The "Candee" Pure Gum Boots (L. Candee & Co., New Haven, Conn.) are made with a view to great durability, and are claimed to be entirely free from the adulterative mixtures with which common rubber boots are cheapened. The heels are reinforced with the "Candee" Co.'s patent *heel irons*, which prevent the heels from wearing down, and therefore add to *durability* of the Boots. These Boots have also the "Candee" Co.'s patent outside straps, a great improvement over the old-fashioned inside web straps, which always curl up so as to prevent the quick insertion of the fingers. The Outside Strap, however, is quite handy, always ready for use, and perfectly durable. The "Candee" Pure Gum Boots are either varnished, or "Dull Finish." Experience shows that the dull finish boots are not quite so durable as those protected from the atmosphere and from the ammonia of



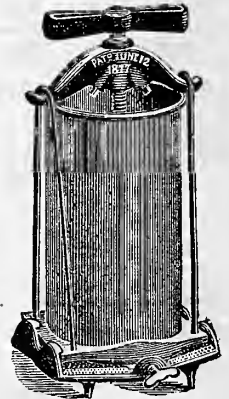
"CANDEE" PURE GUM BOOT.

barnyard-manures by a coat of varnish. Hence the manufacturers recommend the Varnished Pure Gum Boots, and warrant every pair to give reasonable satisfaction. We offer the Men's Size for 8 subscribers, at \$1.50 each, or the Boys' Size for 6 subscribers, at \$1.50 each. Carriage to be paid by receiver. In ordering these Premiums, state the size of the shoe you wear.

No. 7.—House-

hold Press.—

This is one of the most convenient little inventions for the housekeeper that we have seen. It is designed for pressing corned beef, spiced meats, boned turkey and chicken. By an easy change of the bottom, the press can be used in making jellies, cider, or pressing out lard, tallow, herbs, or beef for tea for invalids, and in many other ways. Supplied by W. A. BOARDMAN, Medway, Mass. We will send one *free* for 4 subscribers at \$1.50 each, [or on receipt of the price, \$2.00.] Expressage to be paid by Receiver.



Premium 7



No. 8.—Bracket-Saw Drill, No. 1.

—A very useful little tool. The Drill Stock, and Six Drill Points, and Wrench, are packed in a box. For only Three subscribers at \$1.50 each, we will send the Drill, or we will supply it to any one, post-paid, for \$1.15.

[For the description of a **Great Number** of other most valuable Premiums, send your address by Postal Card to ORANGE JUDD COMPANY.]

Imperial Egg Food.



(Trade Mark.)

Patented February 25, 1875.

Will make your Hens lay. Permanently benefits laying Hens, Moulting Fowls, and Young Stock. It makes the Poultry Yard the best paying part of the farm. Packages sent prepaid for 50c. and \$1.00. Twenty-five pound kegs, by freight, \$6.25. Special arrangements with freight and express companies enable us to obtain very low rates for distant orders. Sold by Agricultural Stores, Grocers, Seedsmen, and Druggists.

CHARLES R. ALLEN & CO.,
216 State Street, Hartford, Conn.
Wholesale Agents: B. K. Bliss & Sons, New York;—Benson, Maule & Co., Philadelphia.—H. B. Arnold & Co., Boston.—O. C. Swain, San Francisco.

The Patent Self-Acting Cow Milker M'fg Co.



Patented May 28th, 1878.

Every one who owns a cow should have one of our wonderful Milkers. A child can use them. Sent free to any part of the United States on receipt of \$2. Send for our Illustrated Pamphlet on the Cow, containing sectional views of a cow's teats and bag dissected and scientifically explained, by Drs. White and Wilson of this city. Sent free to any address.

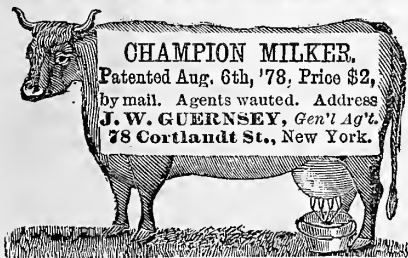
GEO. KING, President.

Office, 575 Broadway, New York.

Cow Milker.

SENT FOR \$1.00 PER SET, PRE-PAID, BY MAIL.

THE NEW UNIVERSAL COW MILKER is warranted to MILK BETTER than any other. It is perfect in every particular. It holds or starts the milk at pleasure. No bulge, rubber, holes, to irritate the teats. Simple, durable, clean, and always ready. **I. W. PARMENTER**, box 464; 15 Murray St., "Methodist" Office, N. Y. City.



POLAND CHINA OR MAGIE HOGS.

L. L. REED, Auburn, Ceauga Co., Ohio,
Breeder and Shipper of Cotswold Sheep,
Magie Hogs, Bronze Turkeys, and all
the leading kinds of Fancy Poultry.
Send for Circular, free.



Catalogue, with much information, free.

W. ATLEE BURPEE & CO., 221 Church St., Phila., Pa. P. O. Box 1890, having raised a large stock of Thoroughbred Pigs and Fancy Poultry, are selling at greatly reduced prices. Also choice Calves, Sheep, and Dogs. Prices and new illustrated Catalogue, with much information, free.

CHESTER WHITES,

PREMIUM HEADQUARTERS STOCK.

Also, Improved Yorkshire and Berkshire Pigs, all ages. Thoroughbred Jersey and Ayrshire Calves, "deep butter and milk strains," a specialty. Scotch Shepherd and other Dogs, bred and for sale by **FRANCIS MORRIS, Philadelphia, Pa.**

Lewis' Lancashire Swine.



Have No More Hog Cholera! These swine have taken first premiums in England and this country. White in color, well haired, very hardy, healthy, small waste, easily fattened, very prolific, large size. Send for circular.

W. G. LEWIS,
Framingham, Mass.

A FEW SPLENDID

AYRSHIRE BULLS

for sale. One and two years old, from the

BEST OF DAIRY STOCK.

Also Cows and Heifers; South-Down Sheep, and Berkshire Hogs, Collie Dogs, and White Dorking Fowls.

WM. CROZIER, Northport, N. Y.

GAME FOWLS. RED IRISH SETTERS,

and Show Carrier Pigeons, shipped by **J. C. COOPER, Cooper Hill, Limerick, Ireland**, winner of Gold Medals at Paris and New York. Bronze Medal and Diplomas Centennial, Philadelphia; also Thoroughbred Hounds, Beagles, and other Dogs. J. C. C. can likewise select Sheep, Cattle, and Horses for clients, having had long and large experience in them.

Pekin, Aylesbury, and Cayuga Ducks, Bronze & Narragansett Turkeys, Light Brahmas, Jersey Cattle, A. I. C. C. R., and Cotswolds, at low prices. Address W. CLIFT, Mystic Bridge, Ct.

STOCK FEED STEAMER.

SEND FOR CIRCULAR.

CHAS. R. ELLIS,
182 Center Street, New York.

Thoroughbred and Grade Jerseys.

I offer for sale, at reasonable prices for the quality, 75 head of thoroughbred and grade Jersey Heifers, and Cows of all ages. Also 10 thoroughbred Jersey Bulls, from 2 months to 4 years of age. My thoroughbreds are not equalled by any of the late importations, and my grades recommend themselves by their production. I refer to every individual who ever purchased an animal of me during the 30 years I have bred this stock. All animals sold by me are guaranteed as represented. For terms, apply in person to **THOMAS FITCH, New London, Conn.**
Hambletonian Horses and Colts, also for sale; best blood.

ALFRED M. HERKNES & Co.,
9th and Sanson Streets, Philadelphia.

Sole Agents for Edward Philip Parsons Fowler of the Island of Jersey and Southampton, England. Importers of

JERSEY AND GUERNSEY CATTLE.

Auction sales in New York October 3d.

For Catalogue, apply as above.

AMERICAN VETERINARY COLLEGE.

Incorporated under the General Law for Incorporation of Colleges,

Chapter 51, Laws 1870—Chapter 319, Laws 1848.

141 West 54th St., betw. 6th & 7th Aves.,
NEW YORK CITY.

The fourth regular course of lectures will commence in October, 1878. Circular and information can be had on application to

A. LAUTARD, M.D.V.S.,
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FARMER'S VETERINARY ADVISER.

By **Prof. I. LAW, Cornell University, Ithaca, N. Y.**

"The best work on the diseases of animals in the English language."—*Country Gentleman*.

Sent by mail from the Author for \$3.

FINE THOROUGHbred POULTRY.

Magrane's Light Brahmas, also Dark Brahmas, Partridge Cochins, and Silver-Laced, White Booted, and Japanese Bantams. Bronze, and domesticated Wild Turkeys.

Our reputation as judges and breeders is ample guarantee for excellence of our stock. Eggs in season. \$3 per 13.

MAGRANE & FAIRSERVICE,
104 Montclair Ave., Newark, N. J.

SUNNYSIDE POULTRY FARM.

Eggs from the following varieties at \$3.00 per setting.

Brown Leghorns, -Pat. Cochins, Black Cochins, White Leghorns, Plymouth Rocks, Dark Brahmas.

A Photograph of the finest Poultry House in the U. S., will be sent to any address for 25 cts.

W. G. TRACY,
Towanda, Pa.

PIGS.

Hall Bros., Ann Arbor, Mich., breeders of pure Poland-China, Suffolk, Berkshire, and Essex Pigs. Prices moderate and satisfaction guaranteed.

N. CUILBERT,

Evergreen Farm, Gwynedd, Pa.,

Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, best varieties of Geese (tame and wild), Ducks, Turkeys, Chickens, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, Eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Song Birds of all kinds, and Shetland Ponies.

Fine Milch Cows always on hand. Newfoundland Pups for sale.

Deer, and Swan wanted.

FINE STOCK.

A NEW AND PERFECT HORSE SHOE. MADE OF WELDED STEEL AND IRON with CONTINUOUS CALK.



Acknowledged to be the best shoe in the world. Prevents interfering. Lameness usually caused by shoeing entirely prevented by its use. Trial set with nails sent on receipt of \$1.00. For free illustrated pamphlet to

The John D. Billings Patent Horse Shoe Co.,
265 Broadway, New York.

Elegant Illustrated Breeder's Manual

PIGS

and Catalogue of Cattle, Sheep, and Poultry. Mailed free to all. 48 pages, containing much useful information, many practical hints, and full description of all the breeds.

150 of as fine, well-marked, high pedigreed, young Berkshires as can be found in America. All fit for exhibition at coming shows. Prices reasonable. Our Southdown, Cotswold, and Leicester Lambs and Yearlings are unsurpassed.

BENSON, MAULE & CO.,
223 Church St., Philadelphia.

Best & Cheapest.



Buchan's Cresylic Sheep Dip prevents and cures the scab and all parasitic diseases of the skin.

Buchan's Cresylic Ointment is CERTAIN DEATH to the Screw-worm or Grub.

For further particulars, send for price lists and circulars to **KIDDER & LAIRD, 83 John St., New York.**

Improved Plymouth Rocks

B. B. R. Games, Bronze Turkeys, and Pekin Ducks of superior merit, for sale at all seasons of the year.

F. H. CORBIN,
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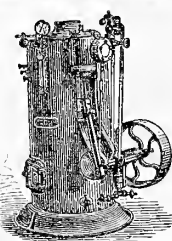
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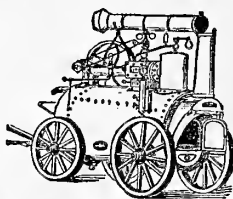


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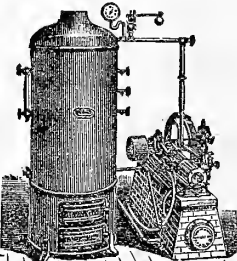
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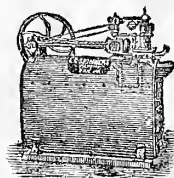


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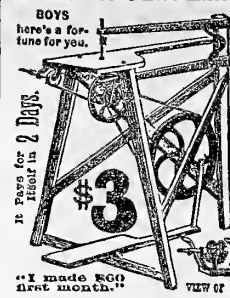
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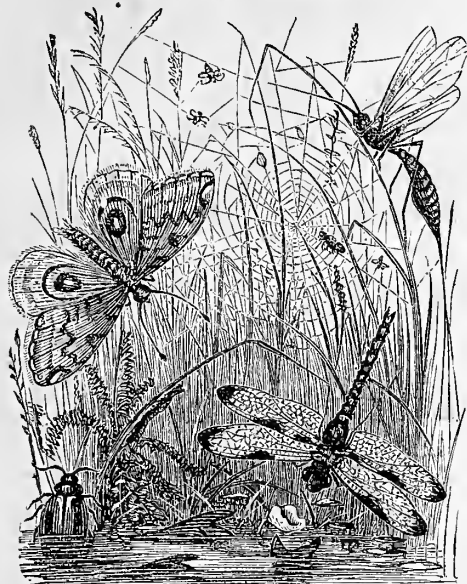
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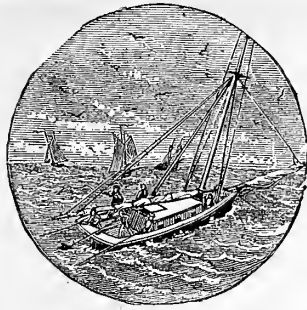
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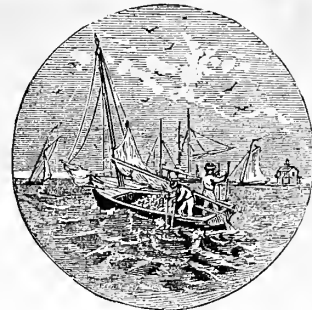
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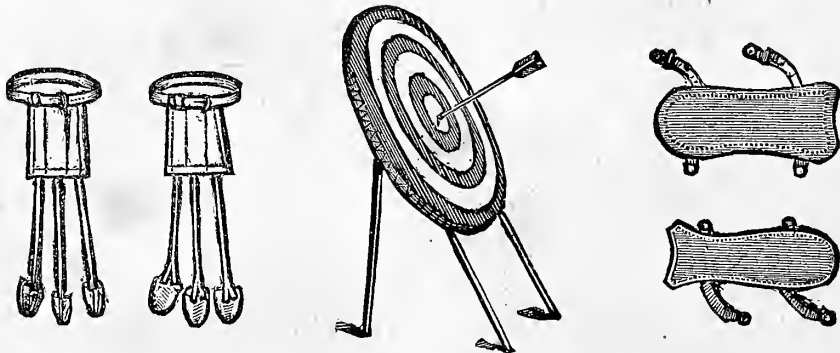


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36.	2 Pieces, 6 feet, best Flemish Strings, 40 to 60 lbs., \$7 50, \$9 00, \$10 50 and \$12 00 each.	
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45.	6 " " 35 to 60 lbs.....	10 00

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12 in. diameter.....	\$1 00	24 in. diameter..... \$2 50
15 " " " " " " " "	1 25	27 " " " " " " " " 3 00
18 " " " " " " " "	1 75	30 " " " " " " " " 3 50
21 " " " " " " " "	2 00	36 " " " " " " " " 4 00
42 " " " " " " " "		5 00

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5 " " " " " " " "	3 00
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No.	Description	Per Doz.
1-12	inch, plain blunt points.....	\$ 0 25
14-15	" " " " " " " "	30
2-16	" " " " " " " "	40
3-18	" " " " " " " "	63
4-20	" " " " " " " "	75
5-21	" " " " " " " "	1 00
6-24	" " " " " " " "	1 25
7-21	" " " " " " " "	1 25
8-24	" " " " " " " "	1 50
9-28	" " " " " " " "	2 00
10-21	" " " " " " " "	1 50
11-24	" " " " " " " "	1 75
12-28	" " " " " " " "	2 00
13-25	" " " " " " " "	2 25
14-28	" " " " " " " "	2 50
15-25	" " " " " " " "	3 00
16-28	" " " " " " " "	3 50
17-25	" " " " " " " "	4 00
18-28	" " " " " " " "	4 50
19-22	" " " " " " " "	5 50
20-25	" " " " " " " "	6 00
21-28	" " " " " " " "	6 75
22-25	" " " " " " " "	8 50
23-28	" " " " " " " "	9 00
24-25	" " " " " " " "	10 00
25-28	" " " " " " " "	11 00

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NOVEMBER, 1878.

AMERICAN AGRICULTURIST

FOR THE FARM, GARDEN & HOUSEHOLD.



VOL. XXXVII.

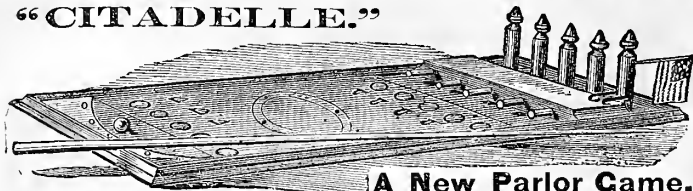
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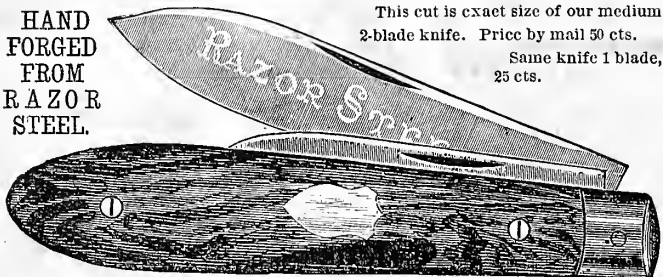
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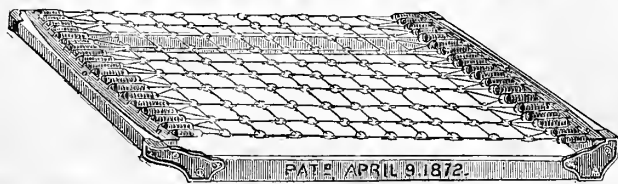
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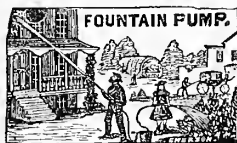
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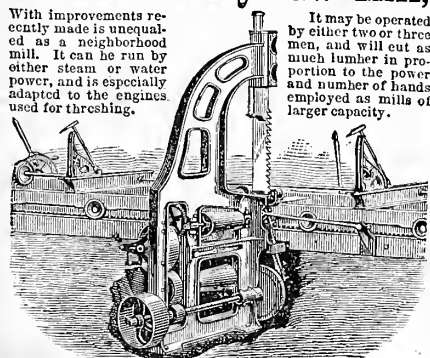


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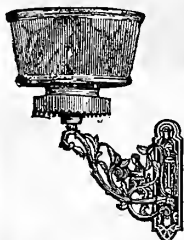
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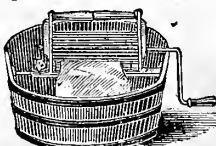
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VOLUME XXXVII.—No. 11.

NEW YORK, NOVEMBER, 1878.

NEW SERIES—No. 382.

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Calendar for the Month.

Day of Month.	Day of Week.	Boston, N. Eng., Mass., N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun rises.	Sun sets.	Mo'n sets.	Sun rises.	Sun sets.	Mo'n sets.	Sun rises.	Sun sets.	Mo'n sets.
1	F	6:34	4:54	11:10	6:31	4:57	11:14	6:28	5:0	11:19
2	S	6:35	4:52	morn	6:32	4:56	morn	6:29	4:59	morn
3	S	6:36	4:51	0:15	6:33	4:54	0:18	6:30	4:58	0:21
4	M	6:37	4:50	1:17	6:34	4:53	1:19	6:31	4:57	1:21
5	T	6:39	4:49	2:18	6:35	4:52	2:18	6:32	4:55	2:19
6	T	6:40	4:48	3:18	6:37	4:51	3:18	6:33	4:55	3:17
7	W	6:41	4:46	4:18	6:38	4:50	4:17	6:34	4:53	4:15
8	W	6:43	4:45	5:21	6:39	4:49	5:13	6:35	4:52	5:15
9	T	6:44	4:44	rises	6:40	4:48	rises	6:36	4:52	rises
10	F	6:45	4:43	4:40	6:41	4:47	4:46	6:37	4:51	4:52
11	M	6:46	4:42	5:21	6:43	4:46	5:23	6:39	4:50	5:36
12	T	6:48	4:41	6:11	6:44	4:45	6:19	6:40	4:49	6:26
13	W	6:49	4:40	7:11	6:45	4:44	7:17	6:41	4:48	7:24
14	T	6:50	4:39	8:15	6:46	4:43	8:22	6:42	4:47	8:28
15	F	6:51	4:38	9:26	6:47	4:42	9:31	6:43	4:47	9:36
16	S	6:53	4:37	10:38	6:48	4:41	10:41	6:44	4:46	10:45
17	S	6:54	4:37	11:50	6:50	4:41	11:52	6:45	4:45	11:55
18	M	6:55	4:36	morn	6:51	4:40	morn	6:47	4:44	morn
19	T	6:56	4:35	1:4	6:52	4:39	1:5	6:48	4:44	1:6
20	W	6:57	4:34	2:18	6:53	4:39	2:18	6:49	4:43	2:17
21	T	6:58	4:34	3:35	6:54	4:38	3:33	6:50	4:43	3:31
22	F	7:0	4:33	4:55	6:55	4:37	4:52	6:51	4:42	4:48
23	S	7:1	4:32	6:11	6:56	4:37	6:11	6:52	4:42	6:11
24	S	7:2	4:32	4:26	6:58	4:36	4:34	6:53	4:41	4:41
25	M	7:3	4:31	5:26	6:59	4:36	5:33	6:54	4:41	5:41
26	T	7:4	4:30	6:34	7:0	4:35	6:41	6:55	4:40	6:48
27	W	7:5	4:30	7:44	7:1	4:35	7:50	6:56	4:40	7:56
28	T	7:6	4:30	8:55	7:2	4:34	8:59	6:57	4:39	9:6
29	F	7:8	4:29	10:2	7:3	4:34	10:6	6:58	4:39	10:9
30	S	7:9	4:29	11:6	7:4	4:34	11:8	6:59	4:39	11:10

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This is for Every Reader

OF THE
American Agriculturist.

We invite Every Reader to examine carefully page 439, and onward: In accordance with the hard times, and the low prices, generally, we have provided a supply of very good articles and placed them on such unprecedented Low Terms (terms never possible before) that every one who reads this will be able to very easily secure one or more desirable articles without cost. For example, there are eight articles, any one of which is available, free, to the person sending only one subscription besides his or her own at the regular single rate. There are Twenty articles requiring only two other names. There are fifteen articles requiring only three other names. And so on—the number of names decreasing in proportion to the increasing value of the articles. Please read carefully all that is said in the first two columns of page 439; also the items on this and next page on "Holiday Presents" and Extra Numbers Free.

To Get HOLIDAY PRESENTS, at little or no expense, will be an easy matter for very many of our readers, as, on consulting pages 439-448, it will be seen that by sending a very few names of subscribers, many of the smaller articles may be obtained free. There are, for example, Twenty different things sold at and worth a Dollar each, that go free to those who send only 3 subscribers at the regular \$1.50 subscription rate, or five at the four-club rate of \$1.25 each.—These Articles can be got at once, and be all ready for the holidays.—All new subscribers sent in these premium clubs are entered on our books at once to the end of 1879, and they receive any numbers issued this year, after their names come in, Without Extra Charge. So it is their gain to subscribe immediately, and that will help those making up premium lists. BUT, besides the Dollar articles, there are many more costly and valuable articles to be had for a corresponding number of subscriptions. The best way is to send on subscriptions as fast as they can be got, and then along early in December send for the article that your list of names up to that time calls for, allowing plenty of time for it to reach you before the holidays, including accidents, or any chance delays in its delivery.

MUCH USEFUL INFORMATION, and Answers to many inquiries, will be found on pages 439 to 448, in the illustrations and descriptions of various articles and implements, and it is well to preserve this number for future reference—for a year to come. Many of the articles are those often inquired after by our readers. It will be seen that an opportunity is given to all to get one or more of them without cost—and very easily too.

PREMIUM ARTICLES FOR SALE

To Our Readers.

The articles described on pages 439 to 448, are intended for *premiums* or *presents* to those who gather and forward subscriptions, and until last year, were confined solely to this. But in response to many requests, always coming, we have arranged to supply most of the articles described, to such of our readers as may not desire, or may not have the opportunity, to obtain them through the subscription offers. This applies to *all* our readers, and especially to those living remote from regular dealers, and to those who may wish our judgment in selecting and guaranteeing the good quality of the articles. A note will be found at the end of the description of each article that can be so supplied, stating the cash price; or the price may be found in the table on page 439. A paragraph at the bottom of that table, tells which articles are delivered with postage or express charges *prepaid*.

Extra Numbers Free.

All new Subscribers now received for 1879, are entered at once on the mail books, to receive the paper up to the end of 1879 for only one year's subscription price. We print a lot of extra copies of this **November Number**, and for the first 8 or 10 days of the month will forward one of these to new names received, if the extra copies hold out so long. After these are exhausted, or after November 10, new subscribers for 1879 coming in during November, will receive the December number *free*. This offer will aid those beginning at once to make up Premium Clubs.

THE EDITORS call special attention to the Publishers' announcements on pages 439-448. It will be well to read through those pages. As Editors, we promise to spare no effort to meet the wishes of the Publishers, to have the *American Agriculturist* for the coming year exceedingly valuable to **ALL** its readers. We trust they will agree with us, that a Journal like this, going into a family for a year, will not only exert a healthful influence in stimulating thought and improvement, and thus elevate the mind standard of all cultivators of the soil, and of others too; but that it will also help guard against errors, against imposition, and assist all to make their labor more profitable. With this view, we invite all to lend a kind influence in making this journal even more widely known, and in drawing to it as readers, many who are now without its visits. This we ask as a friendly favor, aside from the rewards which the Publishers offer on an unusually liberal scale.

The Microscope Still Available.—The offer of the *American Agriculturist Microscope*, extended all through the year 1878. Every subscriber entered on our books, prior to Dec. 31, is entitled to one, on payment of 40 cents if it be taken at the office, or 60 cents if the microscope is to be delivered free anywhere in the United States or Territories. The price to non-subscribers is reduced to \$1.00 at the office, or \$1.20 if delivered free. No other Microscope equals it in value for the price.

The "American Agriculturist" for the West.—Though this journal has now, as for many years past, a very large circulation all over the West, and is highly prized there, we propose to give more attention to the special features of prairie farming and Western culture generally, for two reasons. *First*, for the benefit of our Western readers themselves, and *second*, because there is a remarkable increased interest in farming in the West by people all over the Eastern States, and they are anxious to know all about it. The hard times, affecting especially the manufacturing and mining districts of the older States, have turned the attention of hundreds of thousands to the broad, fertile, and still unoccupied fields between the Mississippi and the Pacific Ocean. As noted elsewhere, one of our staff is now on an extended Western tour, accompanied by an artist. Some of his general notes are given on pages 410-411, and we are making arrangements for new editorial associates living and working on the Western fields. This will not diminish, but rather increase the value of the paper to all the older regions of the country. Indeed, the principles of cultivating, of feeding, of fruit-growing, of mechanics applied to implements, are the same everywhere. The specific practices applying only

to particular localities are few, and every section of the country can learn something useful from every other. This Journal, as indicated by its name, is for *America as a whole*, as well as for other lands.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the *German American Agriculturist*, and thousands of new subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederiek Munch, of Missouri, a skillful, successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued, or contains so much useful information and so many engravings.

The "Defiance" Spring Wheat is coming to the front, if the trials, so far reported, in competition for the prizes offered by Messrs. B. K. Bliss & Sons, are a fair indication. We condense a few of the reports—all sworn statements: (1) California—16 ounces sown in drills 8 inches apart; $\frac{1}{64}$ of an acre area; 3 tons barnyard manure applied; yield, 316 lbs., equal to 337 bushels per acre. (2) Colorado—16 ounces sown; yield, 240 lbs. (3) Colorado—14 ounces sown; area, 29x137 ft.: yield, 290 lbs. (4) Vermont—16 ounces sown thickly on damp land; yield, 50 lbs., some of the heads 7 inches long. These reports show that this is a superior variety of spring wheat, and also what is possible in wheat yields under the highest cultivation. Reference to page 447 will show that the Publishers have secured a quantity of this valuable variety of spring wheat for distribution.

A Whipple-Tree Guide is advertised by the Semple & Birge Manufacturing Company of St. Louis, Mo., which appears to be valuable for wagons and other implements drawn by two horses. It consists of chains connecting the double-tree directly with the front axle, for the purpose of taking the strain of an obstruction to one of the wheels and dividing it between the horses, instead of allowing the pole and an undue proportion of the strain to press upon one horse. This "Guide" has been adopted by many large Western wagon manufacturers.

The American Veterinary College opened Oct. 5th with a new class of 20, and indications of a total attendance this year of about 50 students, an increase of 60 per cent over the last session. We are glad to see this evidence of a growing interest in veterinary education.

Jersey-Ayrshire Sale.—Mr. Thomas Fitch, New London, Conn., announces a sale of the cross-bred Jersey-Ayrshire stock, Nov. 7th. See page 437 for particulars.

Saint Nicholas.—After the failure of so many journals for young people, it was a great risk for Scribner & Co., to undertake a first-class children's monthly. But in selecting Mrs. Mary Mapes Dodge as Editor, success was sure to follow. If there was ever a person adapted to fill a particular place, it is this lady in her fitness to fill the position she now occupies. Mrs. Dodge's great success is due to the fact that—every other qualification being present—her heart (and a large one it is), is in her work. To say that "St. Nicholas" is the best children's journal now published, is to say what every one familiar with it knows. If there is any way of making it better than it now is, Mrs. Dodge is just the one to find it out—and then to "go and do it."

Scribner's Monthly is always a welcome visitor. It is a curious fact, that although there are some half dozen of what may be regarded as first-class monthly magazines, they are essentially unlike, each having its peculiar features. Scribner's, while not neglecting general literature, including fiction, always has one or more articles showing how things are done, which are instructive as well as pleasing. An example of what we mean, is found in the last (October) number, in the article on "The Art Schools of New York," in which the reader is taken "behind the scenes" and shown the various methods of instruction. In the matter of engravings, Scribner, if equalled, is not excelled by any other journal, many of its illustrations being wonderful for their beauty. We are glad to learn that this excellent monthly meets with the success it so well deserves.

Pneumonia in a Heifer.—"M. S. G." Morristown, N. J. Pneumonia is now frequent among cattle in parts of New Jersey, and it is probable that your heifer is suffering from it. On the first attack take special care of the animal; protect from heat as well as cold; provide pure air and clean stable; nurse well; wrap a rug around the fore part of the body, and give warm slops of linseed or oatmeal. If fever is present give one ounce of saltpetre in a bran mash. If worse symptoms occur, either call in a veterinary surgeon, or follow the directions given in some good veterinary work.

The Chicago Fat Stock Show, to be held by the Illinois State Board of Agriculture, at Chicago, Dec. 2d to 7th, promises to be an interesting exhibition, and a profitable one for the farmers. In view of the increasing interest in and demand for meat products, such shows as this are of special importance, and deserve success. Cattle, sheep, swine, and poultry are included, and the premiums are liberal and numerous. Most of the railroads centering at Chicago will make reductions in freight rates for the occasion.

"Twenty-five Cent Dinners for Families of Six," by Miss Juliet Corson, Sup't of the N. Y. Cooking School.—Most of us have learned by experience, that a costly dinner is not necessarily a good one, and it is equally true that a cheap dinner need not be a poor one. Miss Corson, in her hook with the above title, undertakes to show that a good dinner can be made for that sum, not only for one person, but for a family of six, comprising the two parents and four children of the usual ages and appetites. To provide a dinner for this price, not only must Miss Corson's directions for cooking it be followed, but also those for buying the materials. Miss Corson is doing a good work; while she teaches the wives and daughters of the wealthy to make *Poulet a la Marengo* and *Omelet Soufflee*, she does not forget that the wives and children of the laboring men need to be taught how to make a Beefsteak Pie or a good Pudding. Some months ago, we gave a notice of Miss C.'s, "Twenty-five Cent Dinners," and later experience with the work has increased our appreciation of it. The object of the work is to teach the wife of the laboring man and of others with a small income, how to live well. To this end, she shows how to buy and how to cook the materials when bought, in the most economical manner. It is poor economy to put a piece of meat in the oven and dry it, to three-fourths or two-thirds of its bulk. There are much better methods pointed out in this little work. European nations have long ago learned the value of soups and broths, and there is no reason why these should not be common among us; the introduction of these is one of the important features of this work. Another is the introduction of kinds of food that, while cheap and nutritious, can be served in various styles, and should be oftener seen upon the tables of the more prosperous, as well as of those who count the cost. Among these, are split peas, lentils and macaroni—articles affording the most concentrated nourishment at a low price, but with us regarded as luxuries for the wealthy, rather than every-day food for everybody. So well convinced are we of the utility of Miss Corson's "Twenty-five Cent Dinners," that we have arranged with her for the publication of an enlarged edition; it is now in preparation, will be issued shortly, and sent by mail, post-paid, for 25c. We can commend this little work to *every family*, especially to farmers' families, who will find here the methods of cooking the articles of food furnished by the farm, in a variety of acceptable forms. Most farmers have a great abundance, but their tables lack variety, and to this end, Miss Corson's little work will be found full of useful hints.

Wire Mattresses.—Many years ago we received one of the first wire mattresses that were made. We found it a great comfort, and gradually all the beds were changed from the old style with wooden slats to the comfort-giving wire substitute. We regard the wire mattress as one of the great improvements of the century in the way of house-furnishing. Since the first attempts, great improvements have been made, and we find our latest investment in one of the mattresses made by the National Wire Mattress Co., New Britain, Conn., to be vastly better than the earlier articles of this kind.

Silver Plate.—There are some articles, the quality of which can not be judged of by mere inspection, and prominent among these is silver plate. The loss by careless servants, and the temptation to thieves is so great, that many families who can well afford solid silver for their table ware, use plated ware in preference. Burglars are good judges, and they will not be at the trouble of carrying off plated articles. In purchasing such ware, the most shrewd can not distinguish between that which has a mere film of silver and that which has a good, serviceable coating; the sole reliance must be upon the reputation of the maker. The New England Silver Plate Co., New Haven, have the reputation of making articles that are just what they represent them to be—as good as can be furnished at the price.

The Rubber-cushioned Axle is a simple contrivance by which the axle is cushioned within the hub with rubber. Its object is to prevent the jarring and noise produced when the axle is in direct contact with the hub, and is used by some of the first carriage makers in the country. The testimony of well known persons who have this invention in use, would seem to demonstrate that it will do what is claimed for it.

American AGRICULTURIST.

NEW YORK, NOVEMBER, 1878.

Thanksgiving.

Thanksgiving day was instituted by the Pilgrims at Plymouth as a day of fasting, thanksgiving, and prayer, in memory of the bountiful crops gathered at their first harvest, in 1621. Occasional days of thanksgiving were held from then until 1680, when it became an annual custom in Massachusetts, and they were frequent in other colonies, often at different seasons and for various purposes, as for the safe arrival of ships after dangerous voyages,

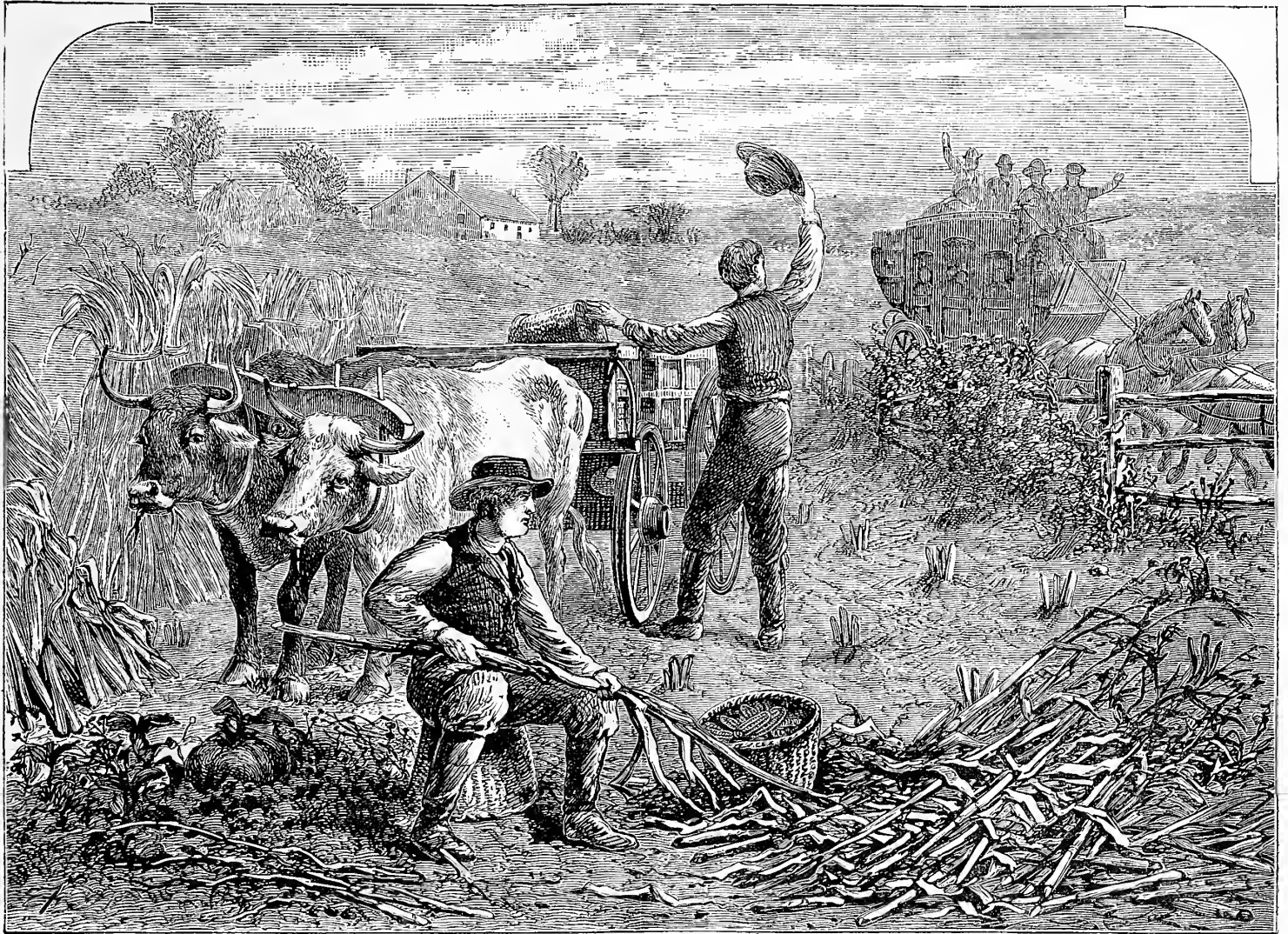
since which time the President has issued such a proclamation annually, supplemented by one from the Governors of many of the States. Year by year the day is becoming a truly national festival, and especially where New England blood and sentiment have made themselves manifest. It is a day, too, which should become national in every sense, as no other nation, as a nation, has greater reason to be thankful to the Giver of all good, for liberty and progress, than ours. One of the most beautiful features of Thanksgiving Day is the gathering of scattered members of the family at the old home; and it is this "coming home for thanksgiving" which our artist has so well portrayed in the engraving. Husking, though mainly over in New England, is common in the latitude of Pennsylvania to Kansas, and further south. We hope this festival will be observed this year at the home of every member of the great *American Agriculturist* family,

it can be performed comfortably and cheaply. Many are getting it husked for 3 cents a bushel, which is cheaper than for the owner to do it himself when he has plowing or draining to do. By and by no one can afford to husk at this price, as the days will be shorter and the weather colder.

Stacking Corn-fodder.—Fodder is damaged by exposure in the shock. It should be stacked at once; it keeps best in small stacks—say 12 feet wide and 16 feet high to the peak. Put ventilators made of rails in the center to prevent heating and moulding.

Seed Corn.—If a full supply was not selected when cutting, it should be done at the husking. (See article on "Selecting Seed Corn," page 412.)

Root Crops.—Gather before injured by frosts. Mangels, being tender skinned, need to be handled with care. The tops make good feed for cows if given in quantities of not more than half a bushel



COMING HOME FOR THANKSGIVING.

or for victories over the Indians. Thanksgiving Day was a national institution throughout the revolutionary war; but there was no national appointment after the general thanksgiving for peace in 1784, until President Washington recommended one in 1789, for the adoption of the Constitution. There were other official appointments for national thanksgiving, in 1795 for the suppression of an insurrection, and in 1815 for the successful termination of the second war with Great Britain. It early became one of the most prominent holidays throughout New England; in other sections it was frequently observed locally, and by some religious bodies. The Governor of New York has annually recommended a day of thanksgiving since 1817. Proclamations for the observance of the day were made by the Governor of Virginia in 1855, and in eight Southern States in 1858. President Lincoln issued proclamations recommending days of special thanksgiving for victories in 1862-3, and in 1863-4 for the annual observance of the day by the nation;

whether in city, village, or country. It is distinctly an American institution, and savors of the peculiar puritan character in its best phase, which deserves to be preserved, and to spread into every section where contentment, happiness, and the ties of family and friendship prevail, and where they are desired to be perpetuated in the coming generations.

Hints for Work.

Secure the Crops.—Many farmers, as well as other people, are always behind hand. They go to large expense and much labor to produce crops, and then permit them to waste. There are potatoes yet ungathered, corn unhusked, badly-shocked corn-stalks exposed to the weather, potatoes and fruit daily depreciating, etc., etc. A dollar paid for extra help now is better than losing ten dollars by delay in securing or properly storing the crop.

Corn Husking is better to be done at once, when

at a time, but they should be wilted at least 24 hours before feeding. Pitting is a cheap and effective method of preserving them. (See "Talks on Farm Crops," on keeping roots, etc., page 415.)

Harvesting Turnips may be done quickly by topping them with a sharp hoe, plowing a furrow away from the roots, and then dragging a harrow across the rows, so as to tear them out of the ground towards the furrow. A slight bruising will be little damage as compared with the cheapness of the method. They may be rapidly thrown into wagons with manure forks. Turnips may remain in the ground until there is danger of their being frozen in. Light frosts do not injure them.

Plowing should be engaged in at every opportunity. Every day's work thus done helps forward the labors of the busy spring time, and opens the ground to the ameliorating effects of freezing.

Top-dressing Fall Grain should be done without delay. If no barn-yard manure is at hand, some

commercial fertilizer should be applied, except on very fertile or previously manured ground.

Draining.—There is no better season for this than the present. It may be many years before the work can be done as cheaply as now. It is a most profitable way of investing money to drain *where it is needed*, as it is on very many soils.

Leaves from the Woods furnish excellent litter. It is the safest bedding for brood sows, and for the lambing pens, as the weak young animals are not entangled in it as in straw. Leaves should be raked up in heaps in the woods, or stacked, for drawing home at leisure.

Swamps that have been cleared may be burned over now, where necessary. The fire should be begun on the side away from the wind, that it may be kept under control and safe. When setting fire to a clearing, notify the neighbors, else you may be liable for damages to their property.

Rubbish of All Kinds, not adapted to the compost heap, should be burned. No weeds in seed should go into a compost. Few seeds are killed by any heat that can be produced by fermenting manure.

Repairing of Buildings is to be attended to: windows glazed, doors tightened, roofs made whole, and ventilators put where needed. It is a good time for painting out-buildings. A mixture of boiled and raw linseed oil, and mineral paint of a dark red color, is cheap, serviceable, and attractive.

The Barn-yard should be cleaned up, and a heap made of all the manure in it. This will ferment, and be the nucleus for a large pile of well decomposed material in spring. A quantity of warm, moist dung will soon start a heat in a new pile, and will act as a leaven to spread the fermentation, which may be kept up through the coldest weather.

Live Stock needs special care just now. The weather is changeable, and protection from sudden storms is imperative. Good food, plenty of pure water, cleanliness, dry bedding, and abundance of pure air, will promote comfort and health.

Working Horses.—New grain is not wholesome for horses, especially new corn. Let horses that are still at pasture have some dry food at least once a day to prepare them for the regular winter feeding.

Weaned Colts should have a pint of bruised oats daily, and if the coat is rough, a little linseed meal. It is time to begin handling, and training them to wear a halter, to lead, and be groomed.

Feeding.—Grain is cheap, and it will pay to feed all kinds of stock liberally. With corn at \$12 to \$16 a ton, and oats at \$20, hay is dear at half these prices. By feeding straw, with increased rations of ground corn and oats mixed with bran, an excellent substitute may be made for hay, which may, perhaps, then be sold at a profit.

Milking Cows are now taken up from grass, well fed, and permitted to take on some fat, which will enable them to stand the coming cold weather with comfort. A cow in full milk ought to eat, at each meal, half a bushel of moistened cut clover, hay, or corn-fodder, and 3 quarts of mixed corn and oat-meal, and middlings or bran, besides a picking of dry hay at noon. A safe rule is to feed a cow all she will eat up clean.

Calves should be comfortably housed at night, and receive regular rations of feed. One-third of a cow's allowance is not too much for a growing calf.

Sheep.—As soon as the teeth begin to fail, the animal—whatever it may be—is past a profitable age. Sheep go down hill fast. Weed out the flocks, and keep only thrifty sheep over the winter.

The Lambs should be protected from cold storms, if older sheep have to rough it. As long as the skin is dry, a sheep can stand a good deal of exposure, but lambs can not. These should now be separated and penned by themselves.

Rams, for service, are kept up in the day-time and admitted to the flock at night. The ewes should be marked and numbered. If the ram's breast is smeared with a mixture of Venetian red and oil, the ewes that are served will be marked. No careful shepherd will let this matter go at hazard, as it is necessary to know when lambs are

expected in the spring. A large, full-grown ram needs a quart of grain a day, and can serve 50 ewes.

Fattening Pigs ought to be pushed rapidly now. The profit is in selling pork early, thus saving a month of the most expensive feeding, when half the food goes to keeping up warmth in the body instead of into fat. With corn at present rates, pork, though low, is still profitable.

Young Pigs.—Leaves are the best bedding. A stove in the piggy, and a warm blanket for the sow, may save a litter in cold weather. In arranging a piggy this should be considered.

Sundry Matters.—Wood cut and split now will be dry in a month. Dry wood, neatly piled under shelter, is a family peace preserver.... Clean up and burn all rubbish; bones, old barrel hoops, boots, etc., should be thus disposed of.... Put empty barrels and boxes, etc., that are of value, in neat piles, and cover them.... Get ready for winter and the snow by leaving nothing "lying about loose.".... Clean out the cellars, drains, and gutters.... Get up timber for making posts and rails in stormy weather.... Be careful of lights. The safest oil is a kerosene which will not take fire and explode if the lamp is upset. Avoid low-priced oils, and use only the best, which give the most light for the money, and are cheapest as well as safest. Keep insured, and then be careful.

Notes for the Orchard and Garden.

While our spring is so brief—there being but a leap, as it were, from winter to summer—this is more than compensated for in the character of our autumn, which allows us to do much of what is regarded as spring, or preparatory work, well in advance. So gradual is usually the approach of winter, so even for the most part is the weather, that our Notes at this time must cover several weeks, if not months, as it is not rare that the tasks suited to October may be carried well into December.

Orchard and Nursery.

It would seem to go without saying, that in a season of abundance, poor fruit has a poor chance in the market—and it seems to many needless repetition to insist that it will pay to assort the fruit. We usually advise making three grades, first and second for market, and a third to be used up at home. This year, two grades are enough: the very best for market, and all the rest to be left at home, as this year "seconds" will not pay expenses.

Make all Snug for Winter.—Fences and gates, especially of a young orchard, need to be cattle-proof. Surface drains are to be made to let off standing water. If the orchard needs under-draining, there will be no better time to do it than now.

A Mound of Earth around the base of the trunk will be of great service to young trees, especially those planted last spring or this fall; this may be 12 to 20 inches high, made steep and smooth; reject all sods and rubbish, and lay it up solid. This will support the tree better than stakes as usually put in, and be of great service in keeping off mice.

Rabbits may be trapped; where they are abundant, blood is found the best application to keep them off, a sprinkling with a swab being all that is needed. Where blood is not available, liver, or bloody meat, may be rubbed on the trunks; rabbits have a great distaste for animal substances, and whatever will smear the tree with blood or meat will answer. A few trees may be protected by binding pieces of lath, cornstalks, or tarred paper around the tree, using wire to keep them in place.

Cider and Vinegar.—The best cider is made in cool weather, as fermentation goes on slowly; for vinegar it makes no difference. See page 418.

To Keep Fruit, the lowest temperature short of freezing, and unchanged, is required. In mild weather, open the fruit cellar at night, and close it very early in the morning. Fruit gives off, in ripening, a large amount of carbonic acid, which helps retard the ripening; but in fruit cellars under dwellings, this should be carried off by a ventilator, as it is detrimental to the health of the family.

Planting may be done whenever the weather suits, but not when the air is freezing cold, or the soil is full of icy clods. In former Notes, directions for late planting and for heeling-in, are given.

Cions may be cut as soon as the leaves are off; label and preserve in sand, or, what is better, fresh saw-dust. Keep in a cool cellar or pit.

Stocks for Root-grafting should be taken up before the ground freezes, assorted, tied in convenient bundles and placed in the cellar or in a pit, with their roots well covered with earth, or set in boxes with an abundance of soil among the roots.

Seeds for those who raise their own stocks should be secured. Apple seed is separated from pomace; small lots may be managed by pounding the pomace in a barrel with water, and washing off the pulp; dry the seed well before putting it away. Stones of peaches and cherries need to be exposed to freezing and thawing in boxes of sand or soil.

Various Matters.—Clear up rubbish in the orchard.... Commence the war on insects by removing the clusters of eggs found near the ends of the twigs.... Pick up all refuse fruit and give to the pigs, to dispose of what insects may be within.

Fruit Garden.

Dwarf Pear and other fruit trees in the garden need the same general care as trees in the orchard; the trees being mostly low, they can receive more close attention than large ones.

Late Pears.—Winter varieties need the same treatment as apples: keep as cool as possible until wanted for use or for market, when a few days in a warm room will bring them into eating condition. Earlier sorts should be on shelves in a fruit-room where their progress may be watched.

Protection often defeats its object, and becomes smothering when done too soon. The covering need not be put upon strawberries until the surface of the ground has frozen; the covering of tender raspberries with earth should be delayed until there is a prospect of freezing weather.

Blackberries and Raspberries may be planted if the weather allows. If it is desired to propagate these, make cuttings of the roots, taking those the size of a quill or larger; cut these into pieces one to three inches long; place them in a box with an abundance of sand or sandy earth, and keep them in a cool cellar. In large quantities they are buried; having nearly filled the box with root-cuttings and sand, put some straw on top, and nail on some strips for a cover. Bury the box *upside down* where water will not stand, with earth enough over it to prevent freezing. In spring the roots will be found callused and with buds, and may be set out in nursery rows. Plants may be had from suckers, but they are not so good as those raised from root-cuttings.... The sooner, after the leaves are off that

Grape Vines are pruned, the better. Young vines set last spring should bear next year one or two shoots, according to their strength; if the present growth is half an inch thick, two shoots may grow next year; if smaller, have but one shoot. Cut the present cane back, leaving a few more buds than shoots are to grow; this is to guard against accidents. Older vines are to be pruned according to the method of training adopted for the vineyard. It is difficult to tell how to treat

Old and Neglected Vines, as no two are alike, and each must be pruned according to its present condition. All the growth of next year will come from the buds now on the vine. Each bud—if conditions are favorable—will push out a shoot, and on that, and not on the canes now present, will the fruit be borne. By keeping this in mind, and with some idea of what is wanted of the vine, leave buds enough to produce the desired shoots, and cut all the rest away. The novice is far more likely to leave too much than to cut away too much.

Propagating the Grape is a very easy matter with most varieties, and can be done by any one, while a few, like the Delaware and Norton's Virginia, require a propagating house, though, in a small way, they may be multiplied by layers in spring. Make cuttings from the prunings, using only the canes of the past summer's growth, cut them into pieces

of two or more buds, according to length of joints; tie in bundles of 25 or 50, the tops all one way, label, and cover with earth or damp moss in the cellar.

"*A new Method of Propagating*," described last month on p. 382, is excellent, and we commend it to those who wish to raise a sufficient number of vines to warrant the moderate trouble required; such difficult subjects as the Delaware will succeed with this. Quinces, currants, and gooseberries, may be treated in the same manner, though

Currants and Gooseberries root so readily, if the cuttings be put in now, that it is not necessary.

Kitchen and Market Garden.

The Notes on fall work have been so full for the past two months, that we refer to those for the main items, adding a few not given there.

Asparagus.—Cut and hum the tops to prevent the seeds from producing weeds, as they are sure to do if scattered or put into the compost heaps, and give the bed a generous covering of coarse manure.

Rhubarb.—If a new bed is desired, make it at once, using a piece of an old root with a bud attached. Place them 4x4 feet, giving each an abundance of old manure well spaded in. Where there is an abundance, take up some roots for forcing, putting them in a box of earth in a cool cellar. In February, set the roots under the bench of a greenhouse, or put some in a harrel with earth to cover well, and set this in a warm place in the kitchen, or near a furnace in the cellar, keep covered, and soon long and tender stalks will appear.

Spinach is safer if covered slightly, putting more straw or marsh hay around than over the plants.

Cold Frames.—Keep the plants dormant, covering only at night except in freezing weather, and then ventilate in the warm part of the day.

Celery in the climate of New York is all stored by the middle or last of the month; in colder localities it must be done earlier. A trench is dug in a dry place, a foot wide, deep enough to bring the tops level with the ground, and as long as needed, or two or more may be made side by side. Set in the plants as close as they will stand, putting no earth among them. Have straw, leaves, or other covering at hand; cover slightly the first cold spell, and as the cold increases, add more covering until it is a foot thick. If some boards are laid lengthwise over the covering it will make it easier to take out the celery if there is snow on the ground. A small quantity of it may be stored in

Boxes in a Cool Cellar; boxes 9 inches wide with sides as high as the plants and as long as convenient, are provided; a few inches of soil are placed in the bottom, and the celery packed in them as in the trenches. Even when the main crop is stored in trenches, a box or two in the cellar will be useful for keeping the immediate supply—of course this will not answer where there is a furnace.

Cabbages.—The general crop is set head down in two rows upon a level spot, and before the earth freezes it is thrown over the cabbages to the depth of two inches. A small lot, or the immediate supply, may be set in trenches, and covered with leaves, straw, or marsh hay, and boards put over this.

Soft Cabbages if planted out in a trench, covered with boards to shed rain, and some litter over these, will come out in spring in fine condition, and are preferred by many to those headed as usual.

Covering with Earth or Sand will keep roots of all kinds in excellent condition, as it prevents wilting. The supply for present use may be kept in the house cellar if placed in boxes or barrels and thus covered, without causing any unpleasant odor.

Parsley where there is no greenhouse may be had in the kitchen. Take a keg of convenient size and bore the sides full of inch and a half holes, 3 or 4 inches apart; take up the parsley roots, removing all the larger leaves and put the crown of each at one of these holes, from the inside, the roots pointing towards the center of the keg. Fill in with good soil as the roots are put in, and set several upright at the top. If this is kept in a sunny window and properly watered, it will give a supply of parsley and make a cheerful ornament besides.

Odds and Ends.—If seeds are saved, clean them, label, and put away in a cool dry place.... Do whatever will help forward the work in spring, plowing or spading may be done whenever the soil is fit to work, leaving the surface rough.... Have tools and machines that are put away for the winter, thoroughly cleaned, and make needed repairs at once.

Flower Garden and Lawn.

In mild autumn weather the grass will make a close stocky growth in preparation for winter, and the lawn should not be mown too late. The lawn should go into winter quarters with a fair length of grass to serve as a mulch. Those who use manure as a top-dressing should apply only that which is so thoroughly composted, that there is no possibility of bringing in weed-seeds. It may be put out at any convenient time.

Perennial Weeds, such as plantains, docks, etc., should be eradicated from the lawn, while the soil is soft from the late rains. A long chisel-like implement, sharp at the lower edge, is useful in cutting or loosening roots well below the surface, and it leaves no mark in the sod.

Winter Gardening.—Those who wish to make the most of their gardens, keep a stock of small evergreens in pots, in reserve. These are plunged in some convenient place the rest of the year, and after the frost has killed the plants in the show beds, they are filled with the potted evergreens.

Dwarf Evergreens are especially suited to this purpose, and there are now so many of these that a selection may be made comprising a pleasing variety in form and color. We have often mentioned *Retinispora plumosa aurea* as a most manageable and showy plant. It is well suited to pot culture, and a bed of that alone would form a bright spot in winter, though it is more effective in contrast with some very dark evergreens. The dwarf Arbor Vitæ, and some of the low varieties of Norway Spruce, such as *conica*, are excellent for such work.

Bulbs that are to be planted, and those that are to be lifted, were mentioned in last month's Notes.

Preparatory and Final work, such as taking up of tender plants, protecting such as need it, the transplanting of shrubs, in mild localities, and other matters of the kind hinted in former months, should be finished up at once. It is a good time to make new beds, and new paths or drives may be laid.

Leaves are too valuable to allow them to be blown about and scattered. Gather those from the roadside that would be otherwise lost, and lay in a stock from the woods. They are the natural covering for herbaceous plants, and if more are collected than are wanted for covering, they make excellent hedging in the stable and from there a rich addition to the manure heap.

Snow Plows should be provided; one for a horse or horses to clear roads, and a hand plow for paths, used in time, will save much work with shovels.

Greenhouse and Window Plants.

Knowing that those who have greenhouses, even of moderate size, usually have one or more works as a guide in the treatment of the plants, we give more space to window plants than to those in the greenhouse.... Plants must have

A *Gradual Change* from the free air and the alternation of warm days and cool nights to the close air, and often uniform temperature of the living room. We should have much fewer complaints of failure with house plants, were it generally known that they require less heat in the dark than they do in the light, and that the night temperature should be at least 15 degrees less than that of the day.... The observance of

A *Few Simple Rules* will promote success with house plants. Always let the night temperature be 15° lower than that of the day. Change the air of the room thoroughly every day without allowing a cold current of air to fall upon the plants; this may often be done through an adjoining room. Water when water is needed, and only then; it is better to let a plant suffer for a little—as shown by the flagging of the leaves—than to over-water and

keep, as too many do, the soil in the pots in the condition of mud. Avoid dust as far as possible, by covering the plants while sweeping; but with all care they will get dusty; those with smooth leaves may be sponged once a week, going over each leaf with a soft sponge, or soft cloth, dampened with blood-warm water.

Bulbs.—No plants give more satisfaction in window culture than the Holland Bulbs. Hyacinths and the Polyanthus Narcissus are the most popular, because, besides their bright colors, they are delightfully fragrant. Tulips, Crocuses, etc., are showy, but lack odor. Bulbs may be grown in sand, moss, sponge, or in water, but such methods are merely fanciful, and do not give a strong bloom like those in rich soil in pots. Equal parts of good garden soil, old cow-manure and sand, will give a good mixture. Pot the bulbs at once—it should have been done last month—and set in a dark cellar until roots are formed.

"*Winter Greeneries at Home*" is the title of the best work on window culture that we know of. It is also the title of what every one may have, with a little care. If our rooms are not suited to flowers, there are none that will not admit of abundant green. There can be no more beautiful decoration to a room, however humble, or however grand, than green foliage. The best of "Winter Greeneries" is Ivy—of course the true or "European"—whether "English," "Scotch," or "Irish," the same thing being often called by all these names. A note on page 423 gives the essential points in treating it.

Insects.—Success in the fight with these depends upon promptness and perseverance. Do not wait until the plants get so bad that in despair you write to ask us what to do. Tobacco water, soap-suds, and a soft tooth-brush, a pointed stick for the Mealy Bug, with the thumb and finger applied wherever "life is seen," are sufficient.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions for the month ending Oct. 12th, 1878, and for the corresponding period last year.

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.
26 d's this m'th	1,462,000	7,782,000	5,413,000	605,000	508,000	2,311,000			
27 d's last m'th	1,396,000	8,312,000	5,187,000	534,000	168,000	1,689,000			
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.
26 d's this m'th	1,507,000	11,154,000	7,845,000	617,000	312,000	2,214,000			
27 d's last m'th	1,473,000	11,916,000	8,104,000	691,000	58,000	1,936,000			
Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.
26 days 1878.	462,000	7,782,000	5,413,000	605,000	508,000	2,311,000			
26 days 1877.	403,000	4,118,000	3,419,000	329,000	974,000	1,107,000			
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.
26 days 1878.	507,000	11,154,000	7,845,000	617,000	312,000	2,214,000			
26 days 1877.	441,000	5,913,000	4,551,000	437,000	353,000	1,329,000			
Exports from New York, Jan. 1, to Oct. 10.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Malt.	
bbls.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.
778,159,200	41,971,000	22,817,400	3,421,550	1,516,200	2,980,300	3,315,200			
77,100,520	10,662,600	19,982,250	1,632,300	803,200	157,000	190,800			
76,157,090	20,121,369	14,215,477	816,474	39,392	460,481	470,830			
75,442,211	20,631,499	10,760,680	154,510	225	104,323	240,532			
Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Flour.	Wheat.	Corn.	Rye.
bush.	bush.	bush.	bush.	bush.	bush.	bbls.	bush.	bush.	bush.
Oct. 7, 1878.	1,763,708	1,435,016	199,918	200,275	1,216,554	125,764			
Sep. 10, 1878.	1,163,803	1,113,458	171,889	202,774	697,608	181,841			
Aug. 12, 1878.	1,139,812	898,736	62,647	203,324	472,866	187,003			
July 11, 1878.	591,132	720,781	138,832	174,000	207,769	603,075			
May 7, 1878.	748,196	263,020	75,229	207,576	570,393	258,327			
Apr. 15, 1878.	1,370,081	541,648	106,375	396,861	857,273	253,424			
Jan. 10, 1878.	2,586,715	105,909	286,333	913,898	1,879,985	321,474			
Dec. 10, 1877.	2,844,982	1,723,229	399,077	864,787	1,879,052	358,849			
Nov. 5, 1877.	994,374	2,643,502	166,949	368,429	1,770,759	328,388			
May 7, 1877.	761,686	468,809	193,016	174,375	517,881	291,654			
Jan. 8, 1877.	3,068,010	3,077,504	84,750	905,615	1,083,104	425,406			
Dec. 11, 1876.	3,110,283	3,355,554	218,841	873,310	1,182,322	512,041			
Water Receipts at Albany, from opening of navigation to Oct. 8.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Flour.	Wheat.	Corn.
bbls.	bush.	bush.	bush.	bush.	bush.	bush.	bbls.	bush.	bush.
1878.	4,100	17,922,400	18,493,500	1,377,800	683,300	3,665,100	397,900		
1877.	7,730	4,921,800	18,342,400	719,200	839,300	2,309,800	518,300		
1876.	19,800	8,690,100	7,775,700	491,100	396,600	2,231,400	560,600		
1875.	77,600	13,443,300	6,568,300	102,000	551,400	1,315,200	596,300		

Gold has been up to 101½, and down to 100½, closing Oct. 12 at 101½ as against 100½ on Sept. 12; 100½ on Aug. 12; 100½ on July 13; 100½ on June 13; 100½ on May 13; 100½ on April 17; 102½ on Jan. 12; 103 on Dec. 12; 102½ on Nov. 12; 103 on Oct. 12, 1877.... Extensive receipts, sales, and shipments of Breadstuffs have been reported since our last. Prices have been generally depressed, lower, and irregular; holders in most instances having shown much urgency in their offerings. Foreign market advices have been, as a rule, unfavorable, and tended to impede the export movement. Speculation has been quite active, especially in Wheat and Corn, which, how-

ever, left off heavily. In the Wheat line, the features in the dealings have been: the grades of No. 1 White, Nos. 1 and 2 Red, and No. 2 Amber Winter, which grades have been in liberal supply. Spring has not been abundant, but, toward the close, receipts have been on the increase, giving more prominence to this class of stock in the current transactions. The demand for Grain for the French markets, especially for Wheat and Oats, has been again of important proportions. Barley opened buoyantly, and purchases were made at very high figures, but the market wound up heavily, with values quoted decidedly lower and unsettled. Rye has fallen sharply, the offerings gaining on the requirements of buyers, which have been of less magnitude—notably so on export account. Flour suffered severe depression, through the unusually full and urgent offerings, particularly of low and medium extras of winter wheat product....Cotton has been quoted much lower, and at the close weak, on, however, an active movement, chiefly speculative....Provisions have been fairly active, but, in the instance of Hog products, again quoted cheaper and variable....Wool has been moderately active at about former figures, on generally free offerings....Hops have attracted more attention, but have been quoted lower....Tobacco, Naval Stores, and Petroleum in moderate request, and without important alteration as to values....Seeds have been weaker in price, and in moderate demand....Groceries less active, and generally cheaper....Ocean freights fairly active and generally stronger, though leaving off irregularly.

CURRENT WHOLESALE PRICES.

	Sept. 12.	Oct. 12.
PRICE OF GOLD.....	100 1-4	101 1-8
FLOUR—Super to Extra State	\$3 25 @ 4 10	\$3 40 @ 4 40
.. Super to Extra South.	3 35 @ 4 50	3 50 @ 6 00
.. Extra Western	3 35 @ 4 50	3 50 @ 6 00
.. Extra Genesee	4 00 @ 5 75	3 90 @ 5 75
.. Superline Western	3 25 @ 3 85	3 40 @ 3 85
RYE FLOUR, Superfine.....	2 65 @ 3 25	2 70 @ 3 40
CORN-MEAL.....	2 25 @ 2 95	2 20 @ 2 90
BUCKWHEAT FLOUR, #100 lbs	2 60 @ 2 85	1 60 @ 1 95
WHEAT—All kinds of White.	98 @ 1 17 1/2	95 @ 1 10 1/2
All kinds of Red and Amber.	85 @ 1 09	80 @ 1 05 1/2
CORN—Yellow.....	49 @ 56	45 @ 61
.. Mixed.....	47 @ 54	43 @ 54 1/2
.. White.....	50 @ 58	50 @ 62
OATS—Western.....	24 1/2 @ 37 1/2	23 1/2 @ 38 1/2
.. State.....	28 1/2 @ 37 1/2	27 1/2 @ 38 1/2
RYE.....	50 @ 64	51 @ 61
BARLEY.....	80 @ 1 25	85 @ 1 35
BARLEY MALT.....	65 @ 1 25	65 @ 1 35
HAY—Bale, #100 lbs.....	30 @ 75	30 @ 75
STRAW—#100 lbs.....	25 @ 45	25 @ 45
COTTON—Middlings, #100 lbs	13 @ 12	10 1/2 @ 10 1/2
HOPS—Crop of 1878, #100 lbs	14 @ 18	8 @ 15
.. 1877, #100 lbs.....	4 @ 12	5 @ 8
.. olds, #100 lbs.....	1 @ 2	1 @ 4
FRUIT—Live Geese, #100	32 1/2 @ 45	35 @ 45
SEED—Clover, West. & St. #100	7 1/2 @ 8 1/2	7 1/2 @ 8 1/2
.. Timothy, #1 bushel.....	1 27 1/2 @ 1 35	1 15 @ 1 20
.. Flax, #1 bushel.....	1 48 1/2 @ 1 52 1/2	1 46 @ 1 50
SPOKES—Rope & Cotton.....	11 1/2 @ 12 1/2	10 1/2 @ 11 1/2
MOLASSES, Cuba, 50 test gal.	31 @ 35	30 @ 33
.. New Orleans, #1 gal.....	28 @ 50	26 @ 48
COFFEE—Rio (Gold).....	14 1/2 @ 17 1/2	13 1/2 @ 17
TOBACCO, Kentucky, &c., #100	2 1/2 @ 14	2 1/2 @ 14
.. Seed Leaf, #100 lbs.....	3 1/2 @ 50	3 1/2 @ 50
WOOL—Domestic Fleeced, #100	20 @ 42	20 @ 42 1/2
.. Domestic, pulled, #100	20 @ 38	20 @ 38
.. California spring clip.....	13 @ 27	12 @ 27
.. California fall clip.....	12 @ 20	12 @ 20
TALLOW, #100 lbs.....	6 1/2 @ 7 1/2	6 1/2 @ 7 1/2
OIL—Coke—#100 lbs.....	31 00 @ 31 00	29 00 @ 30 00
POKE—Mess, #1 barrel.....	9 57 1/2 @ 10 00	8 80 @ 9 75
.. Extra Prime, #1 barrel.....	Nominal.	9 @ 9 25
BEEF—Extra mess.....	10 07 @ 11 00	10 07 @ 11 00
LARD, in tins, & blks, #100	6 62 1/2 @ 7 10	6 60 @ 7 05
BUTTER—State, #100 lbs.....	8 @ 28	10 @ 26
.. Western, poor to fair, #100	5 3/2 @ 8 1/2	4 @ 9 1/2
CURSES, #100 lbs.....	16 @ 20	20 @ 23
EGGS—Fresh, #1 dozen.....	9 @ 13	10 @ 15
POULTRY—Fowls, #100 lbs.....	10 @ 15	10 @ 18
.. Chickens, #100 lbs.....	14 @ 16	16 @ 18
.. Penn., #100 lbs.....	5 @ 6	5 @ 8
.. Roosters, #100 lbs.....	11 @ 14	9 @ 11
TURNIPS—#100 lbs.....	1 00 @ 1 75	1 00 @ 1 75
DUCKS, #1 pair.....	1 12 1/2 @ 1 50	1 50 @ 2 00
CHICKENS, #1 pair.....	70 @ 75	80 @ 1 00
GROUSE, #1 pair.....	80 @ 1 00	50 @ 85
PARTIDOR, #1 pair.....	1 00 @ 1 50	1 25 @ 1 75
SNIP, per doz.....	70 @ 93	45 @ 60
WOODCOCK, #1 pair.....	25 @ 35	1 00 @ 1 25
REED BIRDS, per doz.....	— @ —	85 @ 1 25
DUCKS, Wild, #1 pair.....	— @ —	5 00 @ 5 50
CHESTNUTS—#1 bushel.....	— @ —	1 75 @ 2 50
HICKORY NUTS—#1 bushel.....	50 @ 2 25	75 @ 1 75
APPLES—new, #1 barrel.....	— @ —	3 50 @ 8 00
.. Crab, #1 bbl.....	2 00 @ 7 00	2 00 @ 12 00
PEARS, #1 bbl.....	3 @ 10	4 @ 12
GRAPES, #1 bbl.....	— @ —	3 50 @ 8 00
.. Cal fornia, 40-b box.....	— @ —	3 00 @ 7 00
QUINCES, #1 bbl.....	— @ —	4 50 @ 7 00
CRANBERRIES—#1 bbl.....	1 20 @ 1 50	1 40 @ 1 50
FRUIT, domestic, #1 bush.....	1 25 @ 2 50	1 40 @ 2 25
PEAS—Canada, in bond, #1 bu	Nominal.	78 @ 80
POTATOES, #1 bbl.....	1 25 @ 2 25	1 75 @ 2 75
.. Sweet.....	1 50 @ 2 25	1 00 @ 1 75
BERRIES, #100 bunches.....	1 00 @ 1 25	75 @ 1 00
TURNIPS, #1 bbl.....	1 25 @ 2 00	1 00 @ 1 25
BROOM-CORN.....	3 1/2 @ 7	1 00 @ 1 75
SQUASH, #1 bbl.....	1 00 @ 1 50	1 00 @ 1 75
CAN VEGES—#100.....	75 @ 1 25	1 00 @ 1 25
ONIONS—#1 bbl.....	— @ —	— @ —

New York Live-Stock Markets.

WEEK ENDING	Bees.	Cows.	Calves.	Sheep.	Swine.
Sept. 16.....	9,973	58	4,170	27,240	25,715
Sept. 23.....	14,195	27	3,922	38,191	24,514
Sept. 30.....	13,635	84	3,911	31,522	33,821
Oct. 7.....	9,676	86	3,625	30,193	38,293
Oct. 14.....	13,100	59	2,968	35,519	32,993
Total for 5 Weeks.....	63,519	371	18,078	168,113	155,142
do. for prev. 4 Weeks.....	16,032	264	14,707	111,995	104,730
Average per Week.....	12,704	74	3,615	33,622	31,028
do. do. last Month.....	11,753	66	3,677	28,749	26,007
do. do. prev. Month.....	10,963	84	3,698	28,917	21,111

Bees.—The business has been weak, and prices have declined steadily through the month. Large receipts, and a light demand, have reduced the average fully 1/2c. #100, and the rates on low grades twice as much. No improvement is visible as we close our report, and a weak feeling is generally prevalent. Prime cattle to dress, 57 lbs. #100, sold at 10@10 1/2c. #100, with a few extra at 10 1/2c. Poor Western bees sold at 6 1/2c. #100 on an estimate of 55 lbs. to the cwt. Medium varied between these prices.

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Larger Sales.	Aver.
Sept. 16.....	7 1/2 @ 11 c.	9 @ 10 c.	9 c.
Sept. 23.....	7 @ 11 c.	8 1/2 @ 9 1/2 c.	9 c.
Sept. 30.....	6 1/2 @ 10 1/2 c.	8 @ 9 1/2 c.	8 1/2 c.
Oct. 7.....	5 1/2 @ 10 1/2 c.	7 1/2 @ 9 1/2 c.	8 1/2 c.
Oct. 14.....	6 1/2 @ 10 1/2 c.	7 1/2 @ 9 1/2 c.	8 1/2 c.

Cows.—There has been no change to notice in prices of cows; the supply has been meager and the demand poor. Stock has sold from \$23 for poor cows, up to \$60 for good. \$70 has been paid for extra milkers.

Calves.—Good veals have been in steady demand, and prices have advanced, closing at 5 1/2 @ 7 1/2c. #100 live weight. Grass calves sold at 3c. to 5c., and Buttermilk at 4c. to 4 1/2c. #100 live weight.

Sheep.—The range for sheep have been from 4c. @ 5 1/2c. #100 live, the higher price for good Ohio of 120 lbs average. Prime South-down sold for 5c. #100. New York State lambs sold for 4 1/2c. #100. Dressed mutton sold at 5c. @ 7c. #100.

Swine.—Live hogs have been lower, and the closing prices were 3 1/2 @ 4c. #100. City dressed closed easier and lower at 5 @ 5 1/2c. #100.

The Horse Market.—The scarcity of good horses is very evident, and it is impossible to supply the very limited demand on account of the high views of farmers. This difficulty has operated to greatly limit the business both for the city and the export trade. Prices here are from \$150 to \$500 per head, and at these rates it is useless to expect much to be done under present circumstances.

Prices of Feed.

Barley, per ton.....	\$18.00 @ \$20.00
Middlings, per ton.....	19.00 @ 21.00
Ground Feed, per ton.....	15.00 @ 21.00
Linseed-oil-cake, western, per ton.....	41.00 @ 47.00
Cotton-seed-cake, per ton.....	25.50 @ 40.00
Chandler's Scraps, per lb.....	3 @ 4

Prices of Fertilizers.

No. 1. Fern. Gnano 10 p. et. ammonia, standard, #1 ton.....	\$56.50
do. do. Lobos, do. do. do.....	47.50
do. do. guaranteed, #1 ton, cargo J.....	56.00
do. do. rectified, per ton, 970 p. e.....	69.00
do. do. do. do. 3.10 p. e.....	51.00
Soluble Pacific Gnano, #1 ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone.....	55.00
Mapes' Complete Manure (Vile formula) #1, 1,000 lbs.....	26.14
do. do. do. Grain and Grass, #1, 1,000 lbs.....	25.00
do. do. Bone, strictly pure, meal..... per ton.....	17.50
do. do. do. extra fine..... do.....	42.00
do. do. do. fine..... do.....	40.00
do. do. do. medium..... do.....	36.00
do. do. do. dissolved..... do.....	42.00
Stockbridge Corn Manure, per acre.....	20.00
.. Potato do do.....	10.00
.. Tobacco do do.....	50.00
.. Rice do do.....	10.00
.. Wheat do do.....	15.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Gypsum, Nova Scotia, ground, per ton.....	8.00
Nitrate of Potash (95 per cent.), per lb.....	9 @ 9 1/2
Sulphate of Potash (potash 41 per cent) per lb.....	3 @ 3 1/2
do. do. (potash 27 1/2 per cent) per lb.....	1 1/2 @ 2 c.
German Potash Salts (potash 12 to 15 p. c. p. ton.....	\$13.00 @ 18.00
Muriate of Potash (potash 50 per cent), per lb.....	1 1/2 @ 2 1/2
Nitrate of Soda, per lb.....	3 1/2 @ 4 1/2
Sulphate of Ammonia (25 per cent.), per lb.....	4 @ 4 1/2
Dried Blood (ammonia 13 per cent) per ton.....	\$40.00 @ 45.00

Col. Wilder's 80th Birth-Day.—We did not suspect that our good friend, Col. Marshall P. Wilder, had reached four-score years, until we saw that the 80th anniversary of his birth, which fell upon Sunday, Sept. 22, had been commemorated on Saturday, the 21st, by a banquet at the Parker House, Boston. This occasion was celebrated by a number of the Mass. Horticultural Society, the Mass. Society for the Promotion of Agriculture, and similar associations with which Col. W. has been long and prominently identified. The account of the proceedings, indicates that many eminent in horticulture, were present to show their respect to the guest. It is the custom to laugh at the "Mutual Admiration" of Boston people, but it is justified by the fact that they have something to admire. What other city can celebrate the 80th anniversary of a life so useful as that of Col. Wilder? Ever since our earliest recollection, he has stood as the example of horticultural progress, always ready to aid and encourage others. He does not, to us, seem to have grown old—he certainly has not in enthusiasm for his pursuits, and we have no doubt that many more birth-days will be honored by his numerous friends.

Bald Tails and Manes.—"S." of Brooklyn, states that he has found an application of kerosene oil to the thin mane and tail of a horse to produce a heavy growth of new hair. It was well rubbed into the skin. Other stimulating applications, such as a weak alcoholic tincture of cantharides, would probably have the same effect. This is generally used to restore a growth of hair.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Large Exports Continue.—The good work of paying our indebtedness to foreign countries is still going on very satisfactorily. It now looks as if we should send abroad this year, of the products of our fields and manufactories, nearly \$300,000,000 more than we import. Two anonymous correspondents have written us, arguing that the most healthful condition of trade, commerce and finances is when there is a pretty even balance of trade all round. If we grant this, as a general rule, it does not apply now. For years, especially during the war, and subsequently, we borrowed largely from Europe, for war expenses, for building railroads, etc. Now we are economizing in expenses, in the consumption of foreign manufactures, and producing and sending abroad all the surplus we can, and thus paying up this indebtedness, and by so much growing richer as a nation. When all our foreign obligations are cancelled, it will be time to discuss balance of trade, etc. While foreign nations held many hundreds of millions of our national, municipal, and railroad bonds, we were likely to be at any time thrown into financial trouble by the sudden return to us of these obligations, whenever extraordinary financial disturbances occurred abroad, through war or other causes. We are now fast oblitterating this element of trouble by cancelling the indebtedness.

A Neat Tethering Pin.—Mr. "I. N. L.," of Cincinnati, who likes to see his handsome Jerseys on the lawn, has devised a tethering pin which we engrave from his sketch. He writes as follows:

"Having tried several different styles, I regard this as 'the thing,' better even than one you illustrated in September. It is made of 1/2-in. round iron, and is 18 in. in height, leaving 12 in. above ground when in place. The loose ring at the center is about 3 in. in diameter. The points are sharpened flat, and are at right angles to each other; this makes them easier to drive, and prevents the points from springing out. There is no chance for an animal to get a line tangled or foul on such a pin. A pin of this style is cheaply made, costing about 25 cts. each, and is much more slightly than an ordinary single pin."

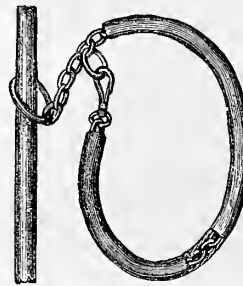


To Gum a Boynton Cross-Cut Saw.—

"Subscriber." A Boynton cross-cut saw will not need gumming when filed properly. File between the teeth when sharpening the saw. The best thing to gum it is an emery wheel, which is kept in every machine shop. If you can do no other way, gum it with a cold chisel. "Gumming" is the technical term for deepening the spaces between the teeth of a cross-cut or other saw.

A Strong Halter for tying bulls or oxen, which

at the same time will not wear the hair from their necks, may be made by taking a stout tie-chain and covering the portion which goes around the neck with leather, as shown in the engraving. The strength of the chain is thus secured, while it is prevented from disfiguring a handsome animal. The covering can be done by any harness maker, or by any one who can use a waxed end.



The Cotton Worm.—Prof. C. V. Riley, Entomologist to the Dept. of Agriculture, called on us on his return from the far South, where he has been to organize a Commission to investigate the cotton worm with something of the thoroughness that marked the work respecting the western locust. The chief field work will be done by Prof.'s A. R. Grote and J. H. Comstock, aided by several local observers in the principal cotton States. Prof. R. discovered what, if known before, has not, to

our knowledge, been published, viz: that certain glands on both the leaves and flowers of the cotton plant exude at the proper season a sweet secretion, that serves as a lure to the moths, and brings them to the plant where they lay their eggs. This suggests a method of trapping the parent insect early in the season. It was found that in the few cases where Paris Green was used to destroy the caterpillars, it was employed in a crude and wasteful manner. When the observations are concluded, we shall, no doubt, have a report of great value to all cotton growers, and incidentally to the whole country.

An Interesting Account of a large French farm, mainly redeemed from what had for hundreds or thousands of years been an uncultivated waste, is given by our special correspondent on page 413. There are hundreds of thousands of acres on Long Island and elsewhere, almost at the doors of New York City, which a free use of capital, intelligently expended, would change to beautiful farms and gardens, at an ultimate large profit to the investor, and to the benefit of the country generally.

Cow-Milking Apparatus—Later Opinion.—In the *American Agriculturist* for September (page 331) we gave somewhat extended remarks expressing our views upon this subject. Numerous inquiries continue to come from our readers, and we have been canvassing the various reports of trials recently received. As stated in September, careful owners of cows may keep one set of well-made tubes on hand for temporary use in cases of badly cracked or severely sore teats; but from all we can gather to this date, we advise not to use any of these implements for ordinary milking. They are unnatural in their action, and several well informed gentlemen of our acquaintance believe that, in their experience, not only have the teats been injured in some instances at least, but the flow of milk has decreased. The end aimed at in allowing them to be advertised in our columns, viz., to obtain a general trial, has been secured, and lest there should injury arise from their use by careless persons, we decide to exclude them from our business columns—at least until such trials as we advised in our former article are made, and until it is positively shown that they are valuable for general use, and that they have no injurious effect upon the flow of milk.

Early Chickens.—"B. K.," Tannton, Mass. An incubator is a good thing if rightly and intelligently managed, and this requires almost constant personal supervision. The larger portion of all the chickens raised in France—the greatest poultry nation of the world—are hatched by incubators. A building on the greenhouse plan is needed to produce chickens in winter, whether hatched by a live hen or a wooden one. With such a house, and conveniences for growing oats and rye under glass to feed them until the spring grass comes, chickens can be raised as well in winter as in summer. A beginner will succeed best by setting hens to come off at the same time the chicks would hatch in the incubator, and then giving each hen 20 to 30 chicks to care for. It is well also to let the incubator hatch even the eggs the hen sits upon, by taking them from her a few days before her time is out; she thus is prevented from crushing the young things before they emerge from the shell. The best fowls for eggs, in the opinion of many, are the Leghorns, white or brown; for meat the Light Brahmas; for both eggs and meat the Plymouth Rocks. The "Poultry World," Hartford, Ct., and the "Poultry Bulletin," 54 Cortland St. New York, are good poultry journals.

Scaly Legs in Fowls.—"Mrs. O.," Ringgold Co., Iowa. As we have often stated, scaly legs in fowls are caused by a parasitic mite which burrows under the skin of the shank and feet. They may be destroyed by applying a mixture of lard and kerosene oil.

Bloody Milk.—"N. C. T.," Warren Co., Pa. Bloody milk is a symptom of congested udder, which soon turns to garget. In a case in the writer's dairy, relief was soon obtained by rubbing the quarters of the udder affected with a mixture of 7 parts of glycerine and 1 part of iodide of potassium; and giving in the feed one ounce of hyposulphite of soda every evening for three days, and after that giving half an ounce of the same every alternate day until the trouble ceased.

Cost of Dairy Barn.—"P. F. H.," N. Y. The cost of the dairy barn shown on page 425, Nov. 1877, depends on the size. The writer has just built a barn for 14 cows, 50 feet long x 24 feet wide and 16 feet high, with dressed floor above, dressed boards outside; all complete at a total cost of six hundred dollars.

Power of a Horse.—"J. A., Jr.," Augusta, Ga. The tractive power of an average horse moving two miles an hour, is equal to 166 pounds. This is steady work. If a horse were fastened to an immovable post by a chain and a spring balance, and were to make a steady pull he could exert double the above power, or

over 300 pounds, but could not maintain it. If forced to his utmost strength in leaping, he would exhibit a force at least equal to his weight, increased by his velocity. A horse is able by a sudden spring to break a chain that would lift a ton or more suspended in the usual way.

Pasturing Hogs on Barley.—"T. A. M.," Queensboro, Ky. The awns or bristles upon ripe barley would probably be dangerous to hogs turned in to feed upon it. But if the barley is pastured when green, it would be quite safe, and almost equally nutritious with the ripe grain, the straw of which would not be eaten. We would turn in the hogs just as the ears begin to show.

A Feed Rack for sheep, which affords double security against waste of fodder, is here illustrated. Figure 1 shows a rack in quite common use, and it is a very convenient one, as it saves much room, is portable, and the box at the bottom allows the feeding of grain. The improved form is represented in figure 2, and consists simply in the addition of an extra frame, hinged to the outer edge of the feed-box on each side;

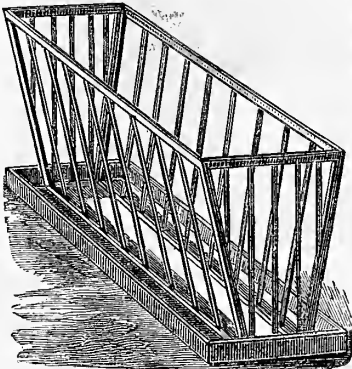


Fig. 1.—CONVENIENT FEED-RACK FOR SHEEP.

it may be closed and fastened by hook and staple to the main rack when not in use. This frame permits the sheep to eat from the rack, but is an extra guard against the waste of hay, or of grain or roots. It compels the sheep to stand square to the rack, so that there is less

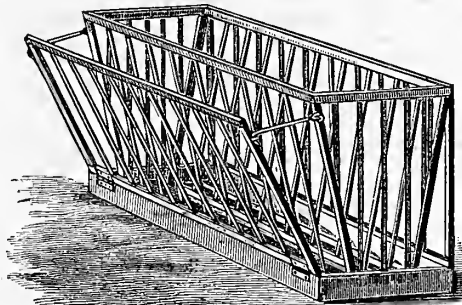


Fig. 2.—FEED-RACK WITH EXTRA FRAME.

crowding, and prevents them from putting their feet into, or fouling the grain-box. The frame on one side of the rack, in figure 2, is represented as closed.

Roup.—"T. W. S.," Spencer, Mass. Fowls exposed to dampness in severe weather, are apt to take cold, which often culminates in Roup. The writer has cured this disease by injecting kerosene into the nostrils by means of a bulb syringe, and then using it to gargle the throat; the latter is effected by holding the throat close enough to prevent swallowing, and after the gargling pouring the liquid out on to the ground. Repeat this once the next day; then feed with hoiled rice and scalded milk, keeping water away for a few days. I. K. F.

Poultry House.—"S. W.," should build in the side hill, sloping south, making the floor 18 inches below the surface on the front side. The foundation walls should be of stone, laid in mortar, and extend to or above the surface. A tight floor of boards, raised a little from the ground, to make a dead-air space, is cleaner, warmer, and better than the bare earth, and permits more fowls to be kept in the same space. I. K. F.

The Best Cement.—"S. W. C.," Deer Isle, Me. "Portland cement" is the strongest, but the dearest. "American Rosendale Cement" is as good for all ordinary purposes, but it requires more time to set. Any cement will crack if frozen when saturated with water.

Salt on Wheat.—A New Jersey farmer writes, that he has applied salt to his wheat fields; and the result was a healthier growth, an increase in yield, and comparative freedom from insects. He writes of another

who thinks that he cleared a prospective corn-field of wire-worms, by sowing eight bushels of salt per acre, the fall previous to planting. Whether salt can be applied to the soil in sufficient quantity to destroy insects and not be in too great excess for the healthy growth of the crop is still an undecided point, upon which careful experiments are needed. Whatever may have been its effect upon the wire-worms, it was no doubt useful, not indeed as directly nourishing the plants, but in acting as a solvent of plant-food in the ground, which was not before in a form available by the roots of the plants.

Saving Seed Corn.—"W. A. D.," Fillmore Co., Minn. To save seed-corn successfully in a cold climate, you should not keep it in a warm place, or especially where it is warm but a part of the time, as there is danger that the changes of temperature may destroy the germinative power. Continued warmth is also conducive to decomposition, which will destroy the life of the seed. Corn and similar seeds are best kept in a dry, cool room, where the temperature is uniform. When your seed from the "small pile kept over the living-room" failed to germinate, the cause was probably due to both dampness and warmth, which incited incipient decay. Seeds differ greatly in the degree of cold they will endure without losing vitality. Corn has germinated after having been subjected to the most intense cold of the polar regions, and an experiment is reported in which other seeds germinated after having been frozen into a cake of ice.

Trapping the Mosquito.—A correspondent near Boston sends the following morning treatment of the mosquito, which is new to us; it has the advantage over the usual slaughter with a damp towel, as it does not stain the ceiling, and the disadvantage that it does not take the insect fasting: "My wife has got—out of her own head—a little dodge which I think worth knowing. We can't abide mosquito-nets over the bed. We do the best we can with netting in the windows, supposed to keep out the mosquitoes and let in the air. But the plagues do get in, and of a morning sometimes my wife is a sight to behold. At daylight they settle on the ceiling overhead, digest their supper, and meditate on the 'good time coming' at the next nightfall. Now comes my wife's turn. She keeps a tumbler with about a half inch of benzine in it; this she seizes, and mounting on a high chair, or some steps, quickly and quietly brings up the mouth of the tumbler against the ceiling over the mosquito, which is *chloroformed* with the vapor in three seconds, and falls into the fluid below."....One of the printers in trying this, arranged a twisted wire to support the tumbler at the end of a broom handle, which much facilitates the operation.

Home-bred vs. Imported Stock.—A long time subscriber to the *American Agriculturist*, who is now engaged in the cattle business in both Iowa and Nebraska, writes as follows: "It is the opinion of many persons, that animals imported from Europe are far superior to our own. Speculators, taking advantage of this idea, are importing draft horses of an inferior grade. Yet at the same time many are fine animals of superior quality. The same is true of imported Jersey and Dutch (or Holstein) cows. The true test of the relative value of imported and home-bred cows is a careful comparison of the milk and butter records of both; this will give results to which the mere facts of importation and pedigree will be but secondary. If this test were made, thousands of dollars now sent abroad for imported stock could be employed and circulated at home to the advantage of all concerned."

Improved Plymouth Rock.—"W. H.," Saratoga Co., N. Y. The Improved Plymouth Rock fowls originated with F. H. Corbin, of Newington, Ct. This strain reproduces itself true to feather and form. The form is peculiar, being plump in the breast and square as to body, and is very much better than the original American Dominique, which was a smaller bird. The Improved Plymouth Rock is one of the best breeds for eggs and the table, as it combines the fleshy body of the Asiatic fowls, with the productiveness in eggs of the Leghorns. The hen is a good mother, and, what is unusual, the cock is a remarkably good foster parent to the young chicks.

A New Early Tomato, "The Alpha."—A basket of fruit of this variety was sent us on Aug. 23d, by Mr. Frank Ford, of Ravenna, O., as the result of his experiments during several years in procuring a variety that combined excellence of form, color and quality, with earliness. Mr. F. states that the specimens sent were gathered 94 days after the seeds were sown in the hot-bed. For the rest, we can say that in form, color, solidity, evenness of ripening, and good flavor, they are as good as the best. Owing to our absence, the basket sent on the 23d was not opened until the 30th, and there was but one tomato in the lot that was not in perfect condition, which speaks well for the marketing qualities of the variety, the future of which we shall watch with interest.

Charcoal Dust.—"F. M.," Fairfax Co., Va. This is quite insoluble, and is valueless as a fertilizer. It may be utilized as a deodorizer in stables and closets; it will make a soil warm when spread upon the surface, by absorption of the sun's rays. In a German experiment, charcoal dust was spread upon the surface of a potato field, and resulted in a superior quality of potatoes; they contained more starch, which produces the "mealy" quality so desirable for the table to lovers of the tuber.

Benzine—Moths—Fire—CAUTION.—Mr. "W. H. S.," writing from Chicago, Oct. 5, referring to our Benzine-Moth Article, last month, says "they tried it Oct. 1, at No 1279 Indiana Ave., and found its value by collecting from the Insurance Companies \$895, on damage to house, and \$1,800 on the furniture of one floor. A little fire was burning in an adjoining room; the connecting door was accidentally opened; the vapor passed through to the fire, was ignited, a servant burned, and that floor of the house and its contents destroyed."—Our "CAUTION" with the October Article was not broad enough to cover a case like this. So, while believing in the value of benzine, as recommended, we add this CAUTION:—*Never use Benzine, Naptha, or Ether, where there is a fire or light, or a match that can be trod on; nor where its vapor can escape into any other room where there is any possibility of any fire or light—whether through a door, stove-pipe, or chimney hole, or any other opening—even a crack.* Such an occurrence as that above named might not happen once in a thousand or ten thousand times, but it is best to be safe. Except when needed in carpets, it will be better to apply it to furniture out of doors, or in an out-house.—This substance is used for various purposes in the arts, and the above caution is always needed.

Amount of feed for 200 Sheep.—"H. E. W.," Westfield, Mass. A sheep of 100 lbs. live weight will require during the winter 3 pounds of hay and $\frac{1}{2}$ a pound of grain per day, or an equivalent of other food; and to each 100 head there may be given in addition, daily, four bushels of chopped turnips. At least 20 square feet of yard room should be allowed each sheep, and from 10 to 15 square feet in the sheds, which are preferable to barns.

Foul Water for Sheep.—"J. W. D.," Limestone, Texas. Water that is fouled by the washings of a sheep yard is very unwholesome for the animals themselves to drink, and would certainly produce disease. Some arrangement to avoid it should always be made.

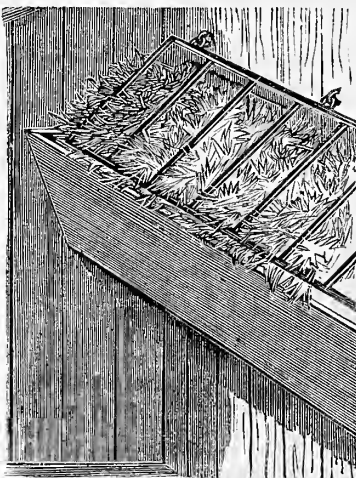
Fertilizers in North Carolina.—In the Sept. *Am. Agriculturist* it was stated that "about \$1,000,000 were expended in North Carolina yearly for fertilizers. We are now informed that the amount "averages three million dollars per annum." In the single month of April, 1877, there were 14,891 tons sold, at an average of \$50 per ton, amounting to \$744,550. This high price is due to the credit system, or "cotton option," which compels the dealers to wait until after the cotton harvest for their pay. In North Carolina the farmer is doubly protected from fraudulent fertilizer dealers. As soon as an "irregularity" is discovered, the State sues the dealer for damages, and seizes all the fertilizer of the same brand found on sale in the State. "Not only are fertilizers analyzed, but every farmer can have the chemicals he uses in composting home manures, analyzed free of charge; and the result, together with the name of the manufacturer, is published in the local State papers."

Winter Oats in East Tennessee.—"E. H.," of Greenville, Tenn., writes that winter oats are a successful crop, being surer than wheat, and may take its place to some extent, as its cultivation is rapidly increasing. "It has many features to recommend it for general cultivation in the South, and as far north as southern portions of Indiana, Ohio, and New Jersey, and its superiority over spring-sown oats is becoming so well known among Southern farmers that the latter crop is being abandoned. The oats sown in the fall have so much longer time to grow, that they are much heavier, and yield more than double the crop sown in spring, while they ripen ten to fifteen days earlier. Winter oats make the best of fall and winter pasture, and have no rust or disease. So soon as our millers understand how to grind and prepare it, there will be a large demand for this grain, to make oat-meal, which is still largely imported from Europe, though much is now made in the Northern States." We learn, also, that this crop has been raised successfully at Framingham, Mass., and elsewhere North.

Drained Marshes.—"Amateur," Bridgeport, Ct. Salt marshes, after the tide water has been shut out by diking, are soonest fitted for cultivation by thorough draining with open ditches—tiles are likely to get clogged—and repeated plowing. Rye, oats, and grass can first be grown, then corn and other crops. The first point is to free the soil from salt, and allow thorough ac-

tion of the air in decomposing and changing injurious compounds to neutral or useful combinations. Two to five years are required to bring these drained marshes into a good agricultural condition.

A Feed Holder, or rather, a rack for keeping hay in a horse's manger, may be constructed as shown in the annexed engraving. It consists of pieces of $\frac{1}{4}$ -inch, round iron welded together to make the framework. It is hinged to the wall with staples and rings, high enough to permit of the customary quantity of fodder to be placed in the manger under the frame. The weight of the iron

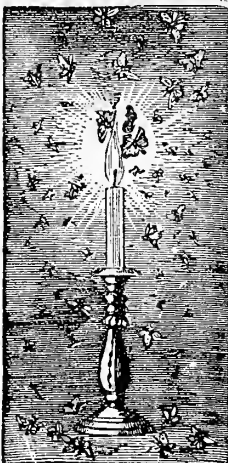


keeps the hay from being pulled out and wasted, while the horse can readily feed between the rods, which are placed about six inches apart. Any blacksmith can make the rack at the cost of a few hours' time and the iron.

Bloat in Cattle.—A French Veterinarian has been investigating the nature of the gases found in the stomachs of cows and other ruminants that had become bloated from over-feeding on green clover and similar foods. Gas present in the rumen (or "paunch") of a cow that died scarcely two hours after access to a clover field, was found to consist of 74.30 per cent carbonic acid, 23.46 per cent carburetted hydrogen, and 2.21 per cent nitrogen. Neither oxygen nor sulphuretted hydrogen could be traced. In the case of a "bloated" sheep, also, 76 per cent of carbonic acid was found. From these observations, M. Reiset is led to suggest alkalies as remedies, especially recommending ordinary magnesia.

Basket Items continued on page 433.

Sundry Humbugs.



While our humbug correspondence brings us much that is amusing, it has, as we had occasion to say some months ago, its serious aspect, and many things come to our notice not calculated to give one a high respect for human nature. A surgeon in large practice once said to us: "It sometimes seems to me that every other man and woman has some physical defect," and one to inspect our pile of humbug letters might receive the impression that moral infirmities and deformities were quite as prevalent as those of a physical character seemed to be to our surgical friend. But when we look upon our budget as a focus where are centered the scattered rays of wickedness from the whole country, the case does not after all seem so bad for poor humanity. In a former volume we classified the various kinds of quack doctors, one genus being those who were UP TO THE "RELIGIOUS DODGE,"

and included those who pretended to be "returned missionaries," who picked up their cure-all among the cannibals, or some "minister of the gospel" whose "sands of life" were ever so many years in "running out," and for aught we know may be running yet. This stealing "the livery of the court of Heaven, to serve the devil in," is one of the meanest forms of rascality, and one which has found a bright, particular example in the person of

ONE MARY E. FOSTER,

which she is of Smithville, Tenn. Mary writes letters,

or, rather, postals, but, perhaps, has them written, as she can hardly get through with them all herself. The Methodist denomination being a very large and influential one, she now sends her favors to editors and clergymen of that. Mary sent us a postal. She sent others postals; indeed, she is so multitudinous in her correspondence, that she must be an important customer to the P. O. Department for postal cards—for Mary has "a frugal mind," and does not invest a 3-cent stamp plus stationery when a one-cent card will do. We received Mary's postal—it was just too gushing, so we said "bosh," and threw it among the humbugs. Mary writes to "editors, to ministers," to "Yellow Fever Relief Associations," and others, varying her introduction a little, but the rest of the precious document is essentially the same. We have one of hers addressed "to Any Minister of the Methodist Church in Flushing," and we suppose similar letters have gone to hundreds if not thousands of other towns. Here is a specimen of

MARY E.'S EPISTLES.

SMITHVILLE, Tenn., Oct. 3, 1878.—*Dear Friends:* Please see my letter on fifteenth page of the "Methodist," issued 7th ult. in your city. The great plague so drains the hand of charity in every direction and is so appalling that we are eclipsed; yet, terrific as the great scourge is, nothing, it seems to me, can be worse than to see a family die of starvation. For three days we have been without food save a little boiled pumpkin, and that is nearly gone. My husband is wholly disabled by paralysis, and he, myself, and little children must perish very speedily without relief, and it is not to be had here. My letter published in the paper was supported by the best of evidence, on which you will see the editor commends it to the charitable. The evidence, in addition to endorsement of statement and character, showed me to be more than twenty years a member of the Methodist Episcopal Church. Now my dear friends and brethren in Christ, will you please hear the cries of my dear little famishing children, together with the heart pleadings of an agonizing father and mother, whose sick of most unspeakable distress cannot much longer bear the scene. Oh! Jesus, my Saviour, help us! How can I bear it longer? Shall this return to me void? I will trust in God, through you, to send food, as upon the raven's wing. Heaven help you to make all due allowance for the importunity of a mother's bleeding heart. Yours in Christ, MARY E. FOSTER.

Letters to ministers conclude by requesting: "Please present my case at your next meeting, and ask help ere it is too late." It seems that

SEVERAL PAPERS WERE CAUGHT

by this appeal; among them our friends of the "Methodist," who gave it the benefit of their wide circulation. The "Methodist," however, has made amends by publishing the real state of Molly Foster's affairs. The Postmaster of Smithville writes that Moll is "the wife of B. T. R. Foster, one of the worst of men, who makes a living by begging and lying. He is now (11 A. M.) on the streets, in the hands of the police, raving drunk,"—and more of the same sort, and the account winds up by saying that "they are living well on the gullibility of the Northern people, etc." The Postmaster seems to have overlooked the fact that he had the power to prevent the Fosters from using the mails. He should have at once stopped their postal cards and reported the case to headquarters. Foster-he-and-she have tried the same dodge on other denominations, never having been members of any, and they are reported to be "in constant receipt of clothing and money," and have several thousands "to good." The fact that this male and female scoundrel thrive by their hypocrisy is not the worse feature of the case. It has the effect of inducing those who have been deceived by them to turn a deaf ear to the deserving.

"LIGHT TO THE WORLD"

is a favorite heading for circulars setting forth the claims of various cheap burning fluids. The sentence should be completed by adding—"bnt death to the inhabitants thereof." There are many of these murderous liquids offered, especially in rural districts, under various names. The chief claim made for them is their great cheapness, and their safety if burned in some particular lamp, or with somebody's patent "safety burner." We would most seriously entreat our readers to let everything of this kind alone—"seriously," because it is a matter of life and death—especially death. These things are called somebody's fluids.—Let all "fluids" alone—eat nothing, drink nothing, take as medicine nothing, put upon your land nothing, give your animals nothing, and especially burn nothing, that is secret. We advise the use of Paris green as an insect poison, because its safety consists in the fact that its real composition and deadly qualities are known. An intelligent person can safely handle Paris green or gunpowder, because he knows the danger. If Paris green were sold as "Pest Poison," and gunpowder as "explosive granules," they would be a hundredfold more dangerous than they now are. Burn nothing that requires a peculiar "safety" burner.

KEROSENE OF THE LEGAL STANDARD

is safe—all other burning "fluids" or "liquids," or what not, are unsafe. The difference in price is many thousand times less than nothing as compared with the risks. Use as many "safety burners" or "non-explosive" lamps as you please, but always use safe and non-explosive

oil. . It sometimes seems strange how frauds "as old as the hills" to us, strike those to whom they are new. Ten or fifteen years ago the schemes for disposing of

"THE QUEER" OR COUNTERFEIT MONEY,

were "as plenty as blackberries;" indeed our humbug articles of those days were largely occupied by them. We have so often shown up the fraud that it seems like galvanizing a corpse to allude to it at this day after so long ago having explained the whole matter in the fullest detail. In brief, there is no law to prevent one from offering to supply counterfeit money. These shrewd chaps know that only those willing to be rascals will treat with them. They are too wide-awake to have any counterfeit money at all—not a dollar. Their whole object is to get hold of the good money of foolish knaves by promises, and give nothing in return, knowing that their victims dare not "squel," as they will expose their own rascality. The style of correspondence in this line has changed, and as the present form is so unlike the old style, we give here

A SPECIMEN LETTER.

My dear Sir, I wish to secure the services of a reliable person in your county to push the sale of a certain class of goods which I manufacture. I guarantee 100 per cent profit and over according to the amount of capital invested. The goods are used by every one and the business is strictly confidential as it is the same as all other large-paying enterprises it is not exactly legitimate, possibly you can guess its nature? Should you be willing to engage let me know as soon as possible and I will send you full particulars. I am yours in confidence

NEW YORK CITY N. Y. J. B. W. Bowery
This business is only for those open for most anything there is money in.

It is an old story revamped. We have often exposed it, and could not but be amused at the honest indignation of a gentleman in Delaware at receiving a proposal like the above, and at the earnestness with which he proposed to us to have the Mayor set a "detective" on the track. . . . This mention of detective reminds us of

THE "SECRET SERVICE" HUMBUG.

We have already warned our readers against having anything to do with the so-called "Secret Service" concerns wherever they may hail from. We are reminded to repeat this warning by the receipt of a letter, which says: "it has been reported to us" that we have mentioned this company as "illegitimate," and done and left undone various matters. As we find next to no signature to the letter, merely "Sec'y," we hardly take it as proof of the "legitimacy" of anything. We do not care whether any particular "Secret Service Company" is better or worse than any other, we shall warn our readers against having anything to do with any one of them. In the present condition of society, "detectives" are sometimes necessary evils, as are scavengers and hang-men, but we do not mean, if we can help it, that the ranks of executioners, or the scavengers of material filth, or the scavengers of social filth—the detectives—shall be recruited from among farmers' sons. There are enough persons mentally and morally so constituted as to fit them to be detectives; such will naturally find their occupation. We do not approve of the scheme, and shall try in all proper ways to prevent our readers from being tempted by the promise of gain, from becoming living lies. A detective is only successful as he appears to be that which he is not. He gains the friendship of a man—rogue it may be, but still a man—only to betray him. Whether it is morally right for the law to employ such agents, we will not discuss, but we are quite sure that they should be employed only by the law, and that no "Company" has any business with them. If this "Sec'y" can, for money, buy the services of persons mean enough to go into the spy business—so utterly lost to all proper feeling as to engage in the business of man-trapping—we shall endeavor that his detectives shall not come from the readers of the *American Agriculturist*. It only needs that the mean, sneaking character of your dirty business shall be known, for every honest young farmer to reject your offers—imperative subscription to your paper (price \$2) included.—By the way, Mr. "Sec'y," what a high old detective shop you must keep!—The only way your crew of spies and sneaks can succeed is through secrecy—yet you go and publish in your paper their portraits with their names! We only wish we had space to reproduce your "portraits."—No one would ever join such a bad looking crew! Did you not make a mistake and reproduce these pictures from the "Rognes' Gallery?"—Wood engraving can not have reached a high development in your town, or you must have some remarkable people in your employ (paper \$2 per annum). One man has one of his eyes staring like a peeled onion, while the other looks like a cranberry. What nonsense it all is, is shown up in capital style by the "Buffalo Express," for they have or had—it is now shut up—a "Secret Service" shop in Buffalo also. The article is appropriately headed.

"HUNDREDS OF FOOLS,"

and gives the whole thing a first rate exposure. The "Express" is rather severe though on the foolish chaps who have applied for employment on this "Secret Ser-

vice," in giving their letters with names and dates. One poor fellow refers to his neighbors, "they never noing me to reviel a secret yet to enny pursson;" another says: "I think i would Bee qualified to fill the place, i never was noan to tell a secret in mi life." This "INTERNATIONAL SECRET SERVICE COMPANY" consisted of just one man—one Hopkins—and when Hopkins was arrested and put in jail as a fraud, they had the whole "Company."—"International" Hopkins was unlike some other companies, as he asked \$3 for his paper. He had at the bottom of his letter sheets "All Communications Strictly Confidential"—which is a good thing to have—ain't it now, Mr. Sec'y?

MEDICAL HUMBUGS.

seem, as the market reports say, to have an "upward tendency," and we have several very interesting ones, but as our space is limited, we take the briefest pamphlet, that of one "Magnetic cure," a name not indicating originality, by one Heath. It is of only 16 pages, each of the size of a small letter envelope, 8 pages being devoted to the business of getting agents, and the others to "A Chapter of My Own Life," etc. We have seen a great many quack medicine stories, but never one quite so stupid as this—Heath is evidently a green hand. He "was born with a good constitntion," but as he fails to tell the street and number, we may doubt whether he was born at all? Heath grew up, became a doctor, had fever and ague, had it bad, and "at last guided as I firmly believe, by the hand of Providence, I

OBTAINED A COMBINATION,

which, when tested on my own person, at once brought relief." Was there ever anything more prosaic? No Indian squaw, no picking up the recipe on the sea shore enclosed in a bottle, no old woman, no nothing. "The effect is like Magnetism" his wife remarked one day, and it was called the "Magnetic cure." And "Agents are wanted in every town in the U. S." It is a very dull pamphlet, but its peculiarity consists in its pictures. We have as a frontispiece a female standing on nothing in particular, scattering flowers. Then we have a cut of the plant that furnishes black pepper, for the sake of variety probably, placed sideways instead of upright, then lastly we have a very dark view of a landscape labeled, "Where the Cerasin grows." The funny thing about it all is, that there is no reference to the pictures in the pamphlet. As "Cerasin" is the name of "Cherry-tree gum," we cannot see why we should have a picture of the place where it grows in a fever and ague pamphlet, which we only notice as being quite the most stupid of anything in this line of literature, that has fallen under our notice—and that is saying a good deal.

The New York Horticultural Society held its Autumn Exhibition, beginning Wednesday, Sept. 25th, and continuing for the rest of the week. As a whole, the show was the best the Society has yet held, and while choice plants were its strong feature, the fruit was more abundant and finer than on any former occasion. The only draw-back was in the borrows called floral designs, some of which were so distressing as to be "Horticultural Absurdities," and are referred to in an article elsewhere with that title. We have seen no report of the prizes; the competition in some classes was very close, and it would be interesting to know the awards. The collections that most interested us, were those of wild flowers, made by the sons of Doct. F. M. Hexamer, of New Castle, Westchester Co., N. Y., who appear to inherit the tastes of their father. This Society has yet to learn the value of printer's ink. Its exhibitions are not properly announced, and are not sufficiently advertised; the daily papers give them but little attention, and after the prizes are awarded, no report of them appears—so far as we are aware. It should be recollected, that those who send fruits, flowers, etc., from a distance, do it in part for the publicity it gives their establishments. As now managed, it is too much like a close corporation.

Horse-Shoe Nails.

One of the most prominent of all causes of lameness in horses is the slivering of poorly made nails, a portion of which pierces the sensitive part of the foot. Figure 1 illustrates how this may occur, even without the knowledge of the shoer, as part of the nail follows its proper course, and is clinched on the outside of the hoof, as if it were the whole nail. Even if the splinter has so pricked the horse, as to convince the shoer of the fact, and he attempts to draw the nail, it will often break off and leave a piece in the foot, to remain a festering cause of lameness, it may be for life. In figure 2 is represented a nail which has splintered in the foot, and broken when being drawn out. It is said that this nail was made from cold rolled iron, and slivered when being driven by a shoer in Providence, R. I. C represents the part which was clinched on the outer surface of the hoof; A that which was driven through the soft lamina lining the hoof, and into the coffin bone, where it was broken off.

Lockjaw followed, and resulted in the loss of a \$1,000 horse. There was less difficulty of this kind in the days when blacksmiths made their own nails from the best Norway iron; but of late years, since machine-made nails, costing but a fractional part as much, have come into use, lameness from this cause has been frequent and

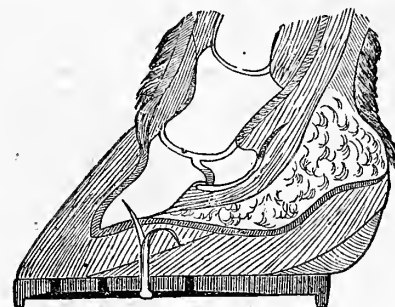


Fig. 1.—SPLINTER PIERCING THE COFFIN BONE.

expensive. To make a horse-shoe nail by machinery, which would be equal in texture to the hand-made nails, and could be sold at a low price, has been the effort of the Putnam Nail Company of Boston, Mass. After years of experimenting, they perfected machinery which, essentially, is a series of small hammers that, in operation, pound upon a rod of hot iron, turning out a finished, pointed nail, in every respect equal to any made by hand. It is well known that iron shaped by machinery, when cold, readily splinters, as may be shown by twisting a piece of wire; and it is now claimed, because ordinary



Fig. 2.—KILLED A \$1,000 HORSE.

machine-made horse-shoe nails are cut and pressed out of cold iron, that they splinter from that cause; while those hammered out of iron at a welding heat, do not so splinter, and hence are superior to any others. The "Putnam hot-forged and hammer-pointed horse-shoe nails" are recommended by many of the most prominent horsemen and farriers in the country, who corroborate the statement of the manufacturers that these nails do not sliver in driving, and that they combine strength, toughness, firmness, and freedom from flaws to a remarkable degree.

Some Rifle Shooting Notes.

A large number of queries about guns, rifle shooting, etc., have accumulated on our table. The following will answer two score or more of them:—[I.] The new long-range bullet weighs 550 grains, the same as its predecessors, and only differs in length and point. Fig. 1 is the

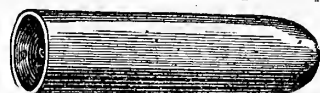


Fig. 1.



Fig. 2.

exact size and form of the older one (diameter $\frac{4}{100}$ ths of an inch, and length $1\frac{1}{4}$ -inch). Fig. 2 is the new one (diameter $\frac{4}{100}$ ths; length $1\frac{1}{16}$ -inch). The latter cleaves the

air more readily, requires 3 or 4 minutes of a degree less elevation for 1,000 yards, and is a little less swayed by the wind on account of its greater velocity. The pointed bullet would have greater penetrating power, but less "smashing" effect in striking an animal than the blunted point...[II.] Experts are using harder bullets than formerly. 1 part tin to 15 of lead was generally adopted, but most now use 1 to 11... [III.] The "best shots" are those who regularly keep up a high score. Extraordinary scores may occur in anyone's experience. Within two months after making the first shot at 1,000 yards, the writer put 18 out of 20 successive shots into the bull's-eye and the two other close to it, and this in a wind which required aiming $7\frac{1}{2}$ feet to the left, a steady wind, however; but we would not like to guarantee being able to repeat that score once in every ten or twenty trials. Mr. Selph, of New Orleans, acquired much reputation for a great score or two, but the writer easily excelled his score when shooting with him on the same target. Prof. Dwight made a noted score at Pittsburg, but fell much behind at Creedmoor. Mr. Partello, of Washington, has made the highest score yet, viz., 44 bull's-eyes out of 45 shots, at 800, 900, and 1,000 yards. He will be cheerfully awarded the championship by all riflemen when he repeats the score, or makes three or four more scores anywhere

near his now famous one....[IV.] A general rule for long-range shooting is that the bullet weigh about 5 times as much as the powder; or 105 grains of powder to a 550-grain bullet. The writer, after several trials, adopted 97 grains, and has not found reason to change. Our 2½-inch shells will not hold more in ordinary loading, though 100 to 105 grains have been put in by dropping the powder into them through a 3-foot glass tube....[V.] Five to ten per cent more of powder will pack into a shell by pouring it slowly directly into the neck of a funnel from a height of a foot or more, or through a long smooth tube....[VI.] The weapon used by Mr. Partello was the "Remington Creedmoor," the same one offered as premium 92, page 447, of this paper....[VII.] Cyanide of Potassium is the best cleaner for used shells. Remove the exploded caps or primers; wash them out in two or three waters; immerse them three to five minutes in a solution of a lump of cyanide the size of a small egg in 2 or 3 quarts of water; pour off the cyanide, and wash with plenty of water; then dry them thoroughly, standing upright, on a dish in a warm, but not very hot oven, or other place. The cyanide solution can be kept covered for future use, adding a little lump more, as needed. Note that it is very poisonous; keep it safe from children, or others; also from spattering eyes, face or hands...

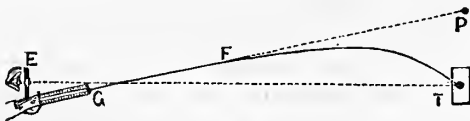
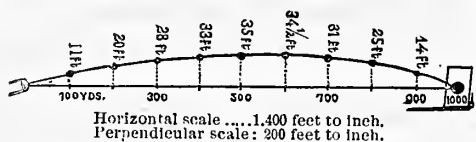


Fig. 3.

[VIII.] The velocity of a 550-grain bullet with 100 grains of powder, going 1,000 yards, starts at about 1,400 feet per second, and ends at 1,000 yards at about 650 feet per second, having a velocity of nearly 900 feet per second at 500 yards or midway. The resistance of the air constantly retards it. The total time is a little under 3 seconds for 1,000 yards, or 3,000 feet....[IX.] A bullet would fall about 16 feet the first second, 48 feet the second second; 80 feet the third second; or 144 feet in 3 seconds. To overcome this falling, the rifle is aimed much above the target—from 125 to 160 feet above it for 1,000 yards, depending upon the powder, a front or rear wind, condition of the atmosphere, etc., but the sights are arranged to aim directly at the target as shown in fig. 3....[X.] The path of the bullet is so high, that if a man were on the top of a high



dition. Thousands of calves in the dairy districts are now "deaconed," or slaughtered for their hides, the hides selling at from 40 to 50 cents, and the runt from 8 to 16 cents. Many of these calves are surreptitiously sold in cities for veal, bringing but a small price. This gentleman finds that calves can be transported to Kansas, Nebraska, and Dakota by his method at a cost not exceeding 15 cents a head per day for food, during the journey, while the carriage from Chicago is not more than \$1 each. Once across the Missouri River, where food is plenty, there is a great demand for them, when they can be bought at moderate rates. This method of supplying the far West with young cattle promises, if successful, to become quite an extensive business.

Cheaper Shorthorns.

While the farmers of Kansas and Nebraska are bringing in from the older States many Herefords, Devons, Ayrshires, etc., they have a decided preference for Shorthorns. Many of these are obtained directly from the Blue Grass regions of Kentucky; others are purchased from Iowa and Illinois; and still others come from New York and other Eastern States. During the past two years the prices of fancy pedigrees have materially diminished. Short-horn bulls which ranged from \$200 to \$400 in 1875-6, are now frequently to be had at from \$75 to \$100.

Agricultural Machinery on Western Farms.

The prairie farmer is strongly tempted to invest in much machinery. On account of the scarcity of labor, and the great amount of work that can be done by mowers, reapers, and other machines, he is very apt to run in debt, or to mortgage his land for means to buy them, and at once gets "his nose on the grindstone," where it is often held for many years. All over the Prairie States one encounters pre-emptionists and land purchasers who are worrying under the debts they have contracted for machinery. The wonderful saving of labor by their use makes it desirable for the settler to secure as many as possible of those machines, provided they are good. Yet farmers with small means should be careful how they contract for them, without seeing their way clearly to payment. The crops relied upon to furnish the means of payment may fail, and then comes embarrassment. One point we would especially enforce, *i. e.*, the exercise of the greatest care in the selection of all farm implements and machines. In our intercourse with the far Western farmers during our visit among them last year and the present season, we were surprised to observe how utterly worthless is much of this machinery. It easily gets out of order, and is liable to require frequent tinkering and repairs, and thus becomes a constant source of annoyance to the owner. Agents for farm machinery of all kinds are to be found offering their wares to farmers at every turn, and, owing to the competition, making "special inducements to purchasers." The farmer who has had little or no experience, is quite too apt to "buy in haste, and repent at leisure." Every stranger must be struck by the careless manner in which costly machinery is left out of doors exposed to all changes of weather. Some make the plausible excuse that they have no farm buildings as yet, but it is a very easy matter to extemporize some kind of shelter, even if it consisted of nothing more than wild hay, corn stalks, or a straw shed. Many thousands of dollars are annually lost by prairie farmers through neglect to properly care for implements.

A Blessing in Disguise.

Strange as it may seem, it is the general opinion in far Western States, which a few years ago suffered so severely from grasshoppers, or locusts, that this visitation resulted in more good than harm, and that they were actually "blessings in disguise." Some prominent men of Nebraska argue thus: The State was rapidly filling up with an indifferent class of people from the older States. Thousands who had failed in other localities, were coming to Nebraska with the expectation of getting a living without working for it, and as many others were coming without the necessary means to start in such a manner as would lead to success in the future. The new State promised to be overrun with a population that would prove an incubus,

rather than a benefit. The grasshoppers came, and they weeded out this indifferent and unwelcome material, and left the land to be possessed by more worthy successors. After two or more years' struggle with the grasshoppers, the faint-hearted gave out, abandoning their improvements and returning as they best could, to their former homes and friends. As a result, the farmers who remain represent the pluck and courage of the country. It has been a case of "the survival of the fittest," and the present population is a splendid foundation upon which to rest the future success of the State. One of the most prominent men in Nebraska, said to us: "I have no doubt that the grasshopper was the salvation of our State, and has prevented us from being at this time in the midst of general distress and trouble, notwithstanding the abundance of our crops." The manner in which worthless elements were packed into this State in 1873, threatened not only to give an unfavorable mould and character to the population, but to ruin the State itself. The grasshoppers, however, the ravages of which were in many cases greatly exaggerated, turned back the tide, and drove away the undesirable classes who had already effected a lodgement here. Now, the destitute are few in Nebraska, and every one who will work, can earn a living.

Fears of the Indians.

All through the Western States, there has been, during October, an unsettled feeling, due to the forays of the Indians from their reservations. As is always the case at such times, the dangers are exaggerated, and farmers and stock-breeders are driving their cattle from long distances to points of safety, where they cannot be stampeded by the redskins. The number of U. S. troops is far too limited to afford protection to the frontier farmers or ranchmen. In the elections this fall, these border State men promise to make the reduction of the army a main issue, and assert that they will, without regard to past or present political proclivities or parties, vote together against those who do not publicly avow themselves in favor of properly increasing the forces of the regular army.

took the Advice—"Go West Young Man."

Last Winter, an old subscriber of the *American Agriculturist*, who had been unfortunate, and was very much reduced in circumstances, called at 245 Broadway, New York, for counsel and advice. He had a large family of children, and was very despondent about the future. We recommended him to obtain sufficient funds from his friends, to enable him to move to the West, and locate on a prairie farm. This advice was followed. He left Pennsylvania for Nebraska, on the 26th of February last, and on the 16th of March, he was fairly settled with his family on a partially improved farm of 480 acres, in Lancaster Co., Neb., which farm he had agreed to work upon shares. We have just called on him (October) in his Nebraska home, to ascertain what success had attended his removal hither, and this is his report: "On reaching Lincoln, I paid \$300 for a wagon and a strong team of horses—having brought the harness from the East. I also purchased a plow, which completed my outfit, the place having sufficient other implements, such as they were, also cattle and other stock." With his four sturdy boys he planted 100 acres of corn and 50 acres of spring wheat and other crops. The butter which he made and sold during the season, nearly, if not quite, paid his family expenses. Now, at the end of six months, he estimates the results of his half year's work as follows: The figures represent his share of the crops, and the prices are, as will be seen, moderately estimated:

2000 bushels of Corn, at 15 cents..... \$300.00
300 bushels of Wheat at 65 cents, deducting
\$56.10 for 66 bush. of seed wheat paid for at
the contracted price of 85c. per bushel..... 138.90
200 bushels of Oats at 25c..... 50.00
200 bushels Barley at 25c..... 50.00
250 bushels Potatoes at 20c..... 50.00
10 tons of Hay at \$2.50..... 25.00
25 Pigs at \$2.50..... 62.50
9 Ducks at 44c..... 3.96
Garden Truck..... 3.00
Total..... \$683.36

Considering that he has had a living for his family during these six months, the old subscriber from Pennsylvania feels well satisfied with the

above figures. He asserts that to secure an early competence for himself, he only requires sufficient money to purchase cattle. His corn and other grain would pay him far better to feed than to sell it at present prices, while the prairies afford any amount of pasturage and wild hay for cattle.

Shepherd Dogs.

Some dog fancier or breeder could make a handsome sum by giving his attention to the raising and training of shepherd dogs. There is a large demand for well-trained dogs all throughout the sheep-growing regions of the West, and as the flocks of sheep multiply, this demand must increase.

Prairie Chickens.

Prairie chickens are abundant in Western Iowa, and in the country beyond the Missouri, this fall. Two years ago, the Legislature of Nebraska, enacted a law, forbidding shooting these and other birds. The measure was so sweeping in its provisions as to encounter powerful opposition from sportsmen, and also from those farmers who desired the change in their diet which these birds insured. The bill was ultimately pronounced unconstitutional by the courts; not, however, until it had been enforced long enough to insure a very great increase in the number of prairie chickens and other birds, and the immunity which they enjoyed from sportsmen, affords one explanation of the unusual abundance of prairie chickens in Nebraska, this season.

The Chinch Bugs

have made serious depredations in some parts of the far West, during the past year. Prof. Aughey, who has devoted much attention to the study of this pest, strongly advises farmers to burn their wheat stubble, and thus destroy the eggs which are generally laid at the roots of the plants. He assures us that, from his observations and experiments, he is confident this burning process will go far towards exterminating this dangerous foe.

The Western Locust or Grasshopper—Its Visits no Longer Feared.

BY PROF. S. AUGHEY, OF THE UNIVERSITY OF NEBRASKA.

[The following, from Prof. Aughey, the well-known Western Naturalist, will do much to dispel the apprehensions of those who hesitate to go West for fear of the invasions of the locusts. We may add that the views of Prof. A. are in accordance with those of the U. S. Entomological Commission appointed to investigate this insect.—Eds.]

It is well known in the West, that during the winter and spring of 1877, I predicted that that season would be the last of the locust visitations for many years. The U. S. Entomological Commission entertained the same opinion. On the 16th of June, 1877, Prof. C. Thomas and myself, in a report to the Governor, which was published at the time, used the following language: "*** We consider the danger from the young, which have hatched out this season in Nebraska, over, and that this part of the problem is solved. We also believe that the long series of visitations has come to a close. There may be, and doubtless will be, at irregular periods, visitations by migrating swarms, but it is not at all likely that the present generation will witness another such a series as that which has just passed." The predictions made at that time, were singularly verified for that year, and have been for this. Our conclusions were based on facts that we had learned about the natural history of the locust, which have stood, and no doubt will stand, the tests of time. There need, therefore, be no fears of another series of visitations from these insects. Even if they should come again in the distant future, they can not hereafter do the damage that characterized their last visitations. There will be then such a large amount of produce in the State, owing to the greatly increased area cultivated, that locusts will not be able to make much, if any, impression on the crops. Besides, the people have learned how to contend against them. They know now how to meet this enemy as it appears in spring, and it has lost all its terrors to them, especially to those who were here during the spring of 1877.

Movable Feed-Door for Pig-Trough.

"E. W., "Aroostook Co., Me., sends a drawing of a trough for feeding pigs. The door, C, fig. 2, is

hung on hinges at the top, and when closed is held in position by the bolt, E, sliding down into a groove. When going to feed, the bolt is pulled up, the door is swung in beyond the trough, which is placed close against the front of the pen, as shown in the engraving, and is bolted inside of the front of the trough. This holds the door in position, and shuts the pigs away from the trough until it is cleaned out, or the swill or other food poured in, when the sliding bolt is raised, the door swings to its place by its own weight; the fastener is then slid down

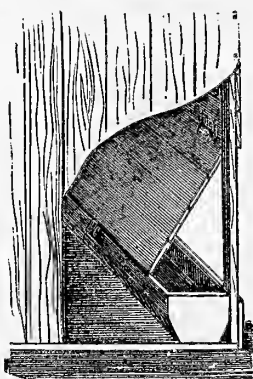


Fig. 1.—FEED-TROUGH CLOSED.

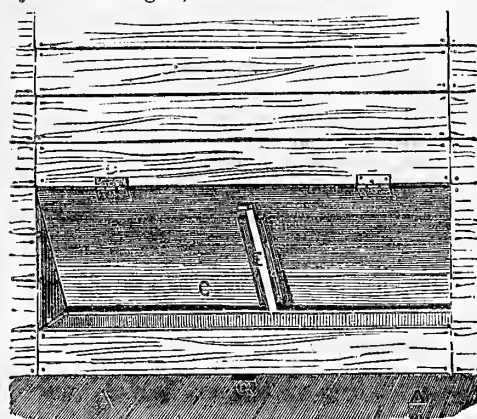


Fig. 2.—MOVABLE DOOR TO PIG-TROUGH.

into the groove, and all made close. Figure 1 shows an end view of the trough and door.

Selecting Seed Corn.

Two ears or more, regularly, to a stalk, is a great desideratum in corn, and should be an essential point in selecting ears for seed. Size, however, is of secondary importance, the almost universal practice of farmers to the contrary notwithstanding. If the reader will take a long ear—almost any one—he will observe that the kernels are rather loosely set on the cob, and are roundish in form. Then take an ear of ordinary length (8 to 10 inches long, 8 or 10-rowed), well filled out at both ends, having a *small cob*, and the butt no larger than the middle, —on such an ear the kernels will be so close set as to be flattened by the pressure, and often all sides will be compressed and angular, and the texture of the grain will be more compact than on the loosely set cob. Now shell *equal lengths* of both ears, and it will be found that the small ear will yield more bulk and weight of grain than the large one, provided both have the same number of rows, and we have seen an eight-rowed ear that yielded as much as a ten-rowed one. Any one can test this.

The obvious inference from these facts is, to select for seed corn ears from stalks bearing two or more ears, having the kernels compactly set, the ends well filled—good plump kernels should cover the "nubbin" end of every seed ear,—the butt of uniform size with the rest of the ear, which should not taper much, but hold the same size from butt to tip, and a *small cob*. These essentials obtained, the larger the ear the better, of course; but the small ear possessing them, is better than a large ear without them. The shape of the kernel from such an ear (of Northern corn) will be long from the cob outward, broad crosswise of the ear, and very thin, and its texture will be hard and compact. These rules for selection of seed corn apply particularly to the varieties known as Northern or

Canada corn; but the same principles apply as well to the many rowed Dent and White varieties grown in the West and South, and they are derived from the experience of intelligent, practical farmers.

The Guenon Milk Mirror.

The "Escutcheon" or "Milk Mirror" of Guenon, long the subject of much discussion, is receiving a practical test at the hands of a Commission appointed by Gov. Hartranft, of Pennsylvania, to act under the direction of the State Board of Agriculture. The result of the first reported examination of several herds, is strong corroborative evidence of the value of the escutcheon as an indication of the milk and butter qualities of a cow. The following table shows, in condensed form, the account of the cows as given by their owners, in comparison with the estimate of the Commission, which is based chiefly on the "milk mirror," but includes also the general appearance of the animal:

Breed.	Age.	OWNER'S ACCT.			THEORETICAL INDICATIONS.			Form of Escutcheon.
		Amount, quarts.	Quality.	Months Dry.	Amount, quarts.	Quality.	Months Dry.	
Shorthorn	13	18	good.	2	18	good.	1	Flanders 1st.
	19	18	very gd	1	18	do.	2nd.	do. 2nd.
	19	20	1st rate.	1	20	1st rate.	1	do. 1st.
	9	18	rich.	3	18	2d rate.	4	Salvage 5th.
	17	18	good.	2	18	good.	3	Flanders Imp.
	19	14	extra.	2	14	very gd	3	do. 4th.
	12	12	good.	3	12	good.	4	do. 2nd.
	11	11	rich.	2	11	rich.	2	Curveline 2d.
	17	17	good.	1½	17	good.	1½	Flanders 1st.
Gr. Ald'y.	12	16	good.	1	16	fair.	8½	do. 2nd.
Guernsey	10	16	1st.	3	17	1st.	2	Curveline 2d.
Jersey	8	13	me'm.	0	13	med'm.	2	Deinjohn 2d.
do.	6	10	1st.	1	16	1st.	1	Flanders 3rd.
Guernsey	6	14	1st.	1	16	1st.	2½	Curveline 3d.
Jersey	5	12	1st.	1	14	second.	1	Salvage 2nd.
do.	4	10	1st.	1	12	second.	1	Curveline 2d.
do.	2	8	1st.	1	12	med'm.	2	Salvage 2nd.
do.	2	6	1st.	1	12	med'm.	3	Flanders 3d.
do.	9	17	1st.	2	18	1st.	—	Curveline 2d.

* 10½ lbs. butter in one week; only trial.

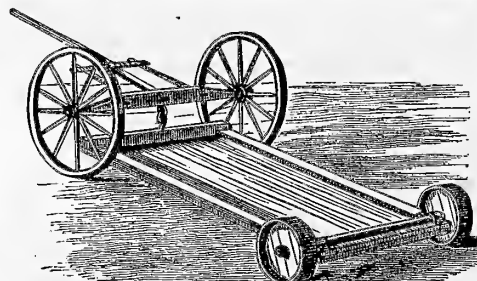
† 16 lbs. 3 oz. butter in one week; largest milk record lost.

‡ 18 to 20; in such cases we give the average to save space.

The table shows a remarkable coincidence between the escutcheon indications, and the recorded facts of the cows' performances. This careful investigation promises to confirm the opinion of stock men who have given this subject careful study, if this, the first trial, is an indication of subsequent results. If we carry this so far as to be able to judge of nearly the exact quantity and quality of a cow's milk before purchasing, it will be a great advantage, and place dairying on a more certain footing as a business.*

Light Power Stone Dray.

An improvement on the ordinary stone-boat, is represented in the engraving, made from a sketch taken at "Deerfoot Farm," Southboro, Mass. The "body," 8 ft. by 34 ft., is made of strong planks, with heavy side pieces, similar to an ordinary stone-boat. The rear wheels, 18 inches in diame-



STONE DRAY.

ter, are two thicknesses of plank, with iron boxes or hubs, and tires five inches wide, and run on a heavy axle taken from a broken down cart. To the under side of this axle the body is strongly bolted. For front wheels, any heavy cart wheels are used. The body is suspended under the axle by a bolt, ring, and hook, as shown in the engraving. Such a dray permits a greater weight to be drawn at one time, and with a much less expenditure of team force, than any stone-boat without wheels. With it, stone or other heavy articles

*This theory is fully explained, with illustrations, in "Guenon on the Milk Cow," Orange Judd Co.; price 75c.

can easily be drawn long distances, and it hangs so low that there is little difficulty in loading it, while the broad tired wheels enable it to be used on soft ground. This dray has played an important part in the clearing of stony land, and in other improvements of "Deerfoot Farm," and the simple attachment of the low wheels has saved to the owner many times the amount of their extra cost.

Relations of Fertility to Stock Breeding.

Barnyard manure is but the hay, grain, and roots, fed to animals, deprived of that portion of their substance used to make flesh and bone, milk and wool, with the wastes of the system added, and the whole mixed with refuse of the yard and stable. In practice we find that the dung of animals contributes to the growth of crops, because it is composed of the substance of those crops. And since the quality of the manure depends on the food consumed, the manure from grain fed animals is more valuable than that produced from feeding roots and hay alone, as grain (the seed of plants) contains a far larger proportion of the more important elements of fertility, than the stem or roots of any plant.

Investigations by Lawes and Gilbert upon the comparative values of manures produced from different foods, showed that, when reckoning the manure made from feeding a ton of hay at \$10.00, the manure from a ton of

Clover is worth.....\$15.00 Wheat\$11.00
Oat Straw..... 4.50 Indian Corn10.50
Wheat Straw..... 4.16 Barley..... 9.83
Barley Straw..... 3.50 Potatoes..... 2.33
D'c'd Cotton-s'd Cake43.33 Mangolds..... 1.66
Linseed Cake..... 30.65 Swedes..... 1.41
Malt..... 10.50 Turnips..... 1.39
Oats..... 11.50 Carrots..... 1.33

The most remarkable fact in this table is, that the cotton-seed is worth more for manure, after having served its end as a nutritious food, than its first cost. This is due to its unusual richness in potash, phosphoric acid, and nitrogen, which are removed by digestion in small part only, its more valuable nutritious portion, the fatty ingredients, having little commercial value as plant food. Indian corn, our most prominent grain food, also gives a high value to the resulting manure. But in selling any of these for food, we only obtain a price corresponding to the amount of digestible material that the animals abstract from them, nothing being allowed for the increased value of the manure heap which is derived from their consumption.

Now with every cargo of corn, oats, or barley, shipped abroad, we send out of the country, away from our farms, an amount of fertility equaling nearly half the entire proceeds of the grain, for which we get no return; and in oil cake, more fertility than its selling price would purchase. Where does this fertility go to?—The grain and oil cake go to Europe, to make beef and mutton for the great English and other markets, and the manure resulting from feeding it enriches foreign soil. Indeed, it is largely to the feeding of cattle and sheep for beef and mutton, that English farmers owe the great fertility of their highly productive lands.

In the light of these facts, is it not better for Southern farmers to convert their refuse cotton seed into beef and mutton, and in selling the latter get as much or more, than they now obtain for the former? while still preserving to their lands the great amount of fertility which is removed in the seed of their cotton, and which they now give away? In the present and increasing demand for American meat abroad, it is well for our farmers, East, West, and South, to consider the feeding of grain for beef and mutton, as a means of ready profit in the sale of meat, and for retaining the fertility which they are now sending over the sea in almost numberless cargoes. Farmers who can not afford to or can not conveniently raise grain for stock food, should consider that in every ton of grain purchased and fed, a large percentage of its cost is retained in the manure heap, perhaps saving the expenditure of just so much money for commercial fertilizers. With a proper selection of animals, and with proper feeding and care, the beef, mutton and pork produced, ought at least to pay the cost of food and labor, leaving the resulting manure as so much clear profit on the investment in stock, buildings, etc.

The Arcy Dairy Farm Near Paris.

[From Our Special Correspondent.]

The Department of Agriculture is very fully represented at the Paris Exposition. The exhibits of tools, machinery, fertilizers, and various farm products, occupy eight different buildings, six of them in the French section. In Pavilion No. 1, devoted to "Products of Agriculture in France," one of the most interesting exhibits is that by the Arcy Farm, L. Nicolas, proprietor. Occupying a wall space, 75 feet long and 12 feet high, are four water-color paintings, 24 x 36 inches, showing two cow-stables, that accommodate 54 and 64 head of cattle; a sheep-house divided into two sections, together accommodating 1,400 sheep; a model milk dairy; maps

chateau with parks surrounding it, vegetable garden, and out-houses, 65 acres; wood land, 202 acres; roads, lakes, ponds, sand-banks, etc., 7 acres. Most of the soil was naturally poor, and had been poorly cultivated. The surface soil, composed of silica and white clay, was almost impermeable, and the subsoil, composed mostly of clay, mixed with ferruginous sand, was intermingled with stones and rocks. In the best parts the arable surface varied in depth from 16 to 24 inches. Of the 525 acres of unproductive land, 375 had lain waste upwards of 70 years. During the past eighteen months this waste tract has been cleared and reclaimed, and ture land, 30 acres; orchard and vineyard, 1 acre; over 600 cords of stone extracted and used in constructing buildings and roads. Drainage was commenced soon after the purchase, and continued

His business in the city was conducted through numerous agencies. Why not make use of these and undertake to deliver milk in Paris—milk guaranteed to be pure, unskimmed, and fresh?—He posted himself on the prices of milk in the different sections near Paris, and thought he could see sufficient profit in the business to warrant him in entering the field and practically testing the question whether Paris needed more and better milk, and whether he could satisfactorily supply that want. He began to send milk to the city, and to make it known that he was prepared to supply customers at their homes. The Parisians bought it, and called for more. The price at first was 10 cents per litre (a little more than a quart). The demand continued to increase. He raised the price to 12 cts. per litre. As his success increased, he began to enlarge his

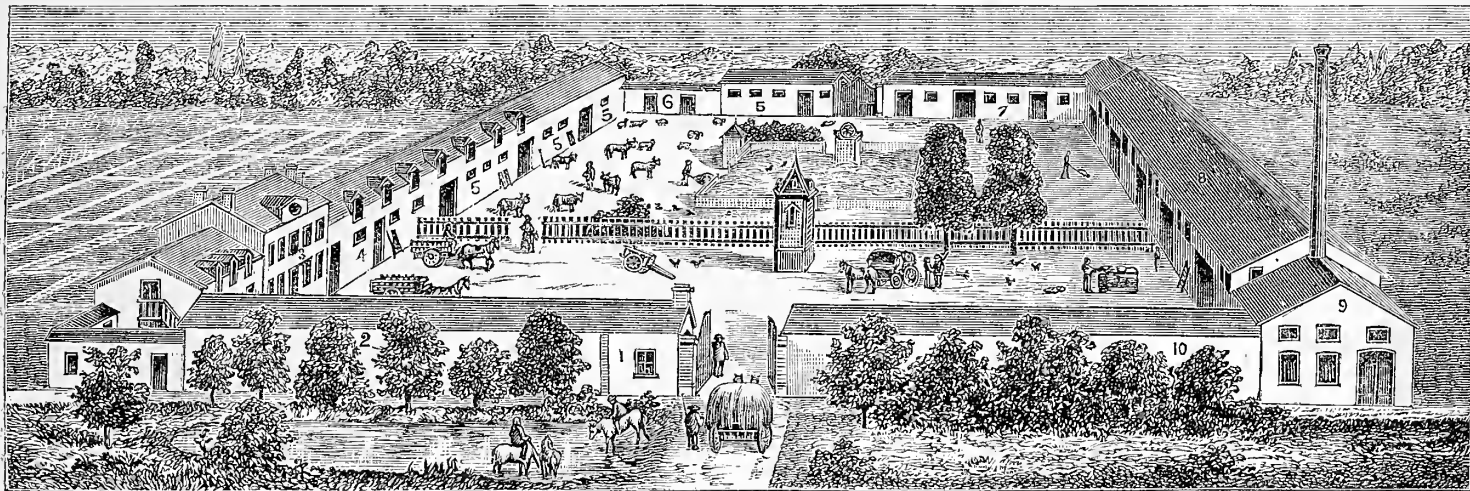


Fig. 1.—THE ARCY FARM BUILDINGS, CHAUMES, NEAR PARIS, FRANCE.

1. Porter's House—2. Implements, Pens, etc.—3. Farmer's House—4. Packing Room, (see fig. 7)—5. Cows—6. Swine—7. Sheep—8. Horses, Hay, Grain, etc.—9. Engines—10. Wagons, etc.

of the farm, and plans of the different buildings. Below on a shelf are arranged samples of the various products, etc., of the farm, including twenty bottles containing specimens of soil; twenty others of fertilizers that have been tested; varieties of stone extracted from the soil; specimens of the first crop of Lucern this year, which is three feet high, and averaged 385 bottles (tnmbles) to the acre; salt for cattle and sheep; one clipping of wool from a Dishley-Berrichon sheep, weight 9 lbs.

11 ozs.; bottles of barley, oats; and English, Bergues and Childam wheat, etc.; potatoes, beets, and turnips; cotton-seed cake used for feeding cattle; and lastly, improved cans, jars, and baskets, used in conveying milk to market.—It is easy to make fine pictures of a farm, but we felt curious to see if Mr. Nicolas' was equal to his water-colors, and on August 7th, after some preliminary correspondence, we had the pleasure of paying him a visit. The estate is in the Department Seine-and-Marne, about 35 miles southeast of Paris, on a plateau, looking down upon the picturesque valley of Yères, and the pretty village of Chaumes, to which it belongs. When purchased by Mr. Nicolas, March, 1872, the Arcy Farm was comparatively small and well nigh worn out. He has since made 64 additional purchases, gradually enlarging its limits, until it now comprises 1,205 acres.

It was originally divided as follows: Unproductive land, 525 acres; plowed land, 375 acres; pas-

uninterruptedly until June, 1876. The 760 acres drained had 145 miles of drain laid, at a total expense of \$19,693—an average of about \$25.75 per acre. The land thus redeemed was previously uncultivable, being wet and cold. One field of beets had been planted, but rotted in the ground and were not gathered. The same field is now one of the best on the farm. Seven miles of ditches were dug, at a cost of \$1,913. An extensive marl-pit on the estate, supplied 800 acres, according to need, an average of about 6 cords being put to each acre, at a total cost of \$5,989. Forest trees were planted on 58 acres found unfit for cultivation.

The large expense incurred for manures led to a new idea which, when developed, changed this place into a stock and dairy farm, and insured the success of an undertaking, which, at the start, was more or less problematical. The production of stable-manure was at first very small, and he found it necessary to purchase substitutes, including 517 tons of night soil from Paris, delivered between April 1st, 1872, and June 1st, 1873, which formed an excellent fertilizer, but the expense, upwards of \$8,000, prevented him from continuing its use. During the first year the different fertilizers used cost \$14,336, and during the five years, ending 1877, a grand total of 6,000 tons, costing about \$39,000, besides 4,522 cords of stable-manure, produced upon the farm. Naturally enough there could be no profits while this expense continued, and the wealthy merchant, who wished to see Arcy a financial success, as well as a pleasant country home, began to look about for an answer to the difficult problem: "How can I make my farm pay?"

facilities for production, and to improve his method of packing and delivering the milk.

The new farm buildings are arranged about a hollow square, as shown in the sketch (see fig. 1), and cover 60,000 square feet (about $1\frac{1}{11}$ acre), with an inner court-yard of 90,000 square feet ($2\frac{1}{15}$ acres). They are built of stone, with thatch roofs. Over 1,200 cords of stone masonry were used in the construction of these buildings; all of the stone, together with that used in paving the court-yard, was extracted from the adjoining fields. By means of reservoirs and pumps, water is conveyed to all points where required for the stables, cow-barns, sheep-pens, etc. The expense of these new buildings, and furnishing them, was \$44,900. A new stable was now added, the number of cows doubled, and a new creamery made, with fittings in white marble, and every convenience for receiving and cooling the milk and packing it speedily.

At first the milk was sent to the city in tin cans, lined with cork, and measured out to the order of the customer. But white glass jars are now used, holding one and two litres, and each sealed at the farm. Herewith are engravings showing the form of the can, with sectional cut, indicating the cork lining (see figs. 2 and 3); also of the glass jar now used (fig. 4), and of the wicker basket in which the jars are packed during transportation (fig. 6). Figure 5 shows the lead seal, stamped with the name "Domaine D'Arcy," by which the cover of each jar is held in place, and the genuineness of the milk assured. Delivery wagons of attractive pattern were built, aiding to advertise the new busi-

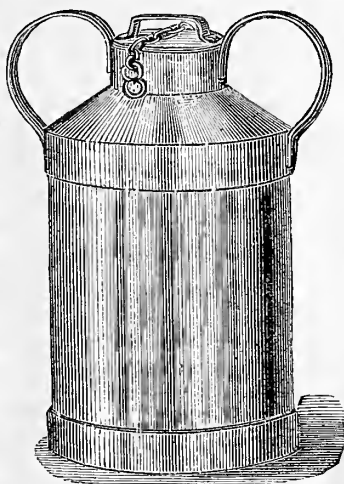


Fig. 2.—ARCY FARM MILK-CAN.

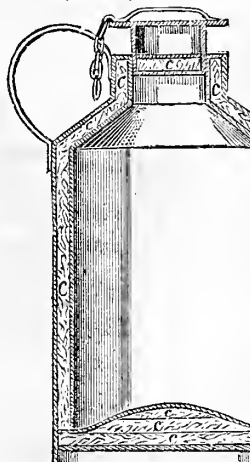


Fig. 3.—SECTION OF (FIG. 2) CORK-LINED MILK-CAN.



Fig. 4.—SEALED, WHITE GLASS MILK-CAN.



Fig. 5.

ness to the Parisian public. The price was again increased, this time to 14 cents per litre (the present price); but its value is now well understood, and the demand, still steadily increasing, has crowned the undertaking with success. Others have since entered the same field, and bottled milk of absolute purity is now sold in Paris in large

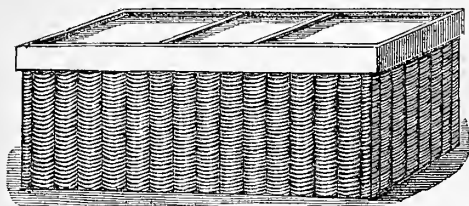


Fig. 6.—BASKET FOR MILK-JARS.

quantities, and an English Company is preparing to supply London with milk after the same system.

There are 117 cows in the Arcy stables, all of Normandy stock. Mr. Nicolas seeks to feed them in such a manner that the milk shall be of unsurpassed excellence, making quality rather than quantity his aim. The following table shows the kind and amount of food given to the cows during the month of April last; also an analysis of the milk, at a temperature of 40.28° Fahrenheit; and at a specific gravity of 1.33:

FOOD FOR COWS. PER HEAD.	ANALYSIS OF MILK.			
	In the Milk.		In the Ash.	
Sugar-beets.....77½	Butter.....42.2	Phos. Acid.....2.529	Albumen.....11.7	Sulphuric Acid.....1.03
Cotton Seed.....6½	Casein.....23.5	Potassa.....1.739	Sugar.....55.2	Soda......725
cake.....6½	Ash.....7.7	Lime.....1.852	Total solid matter per litre.....140.3	Magnesia......108
Lucern.....20	Water.....892.7	Silica, Oxide of Iron, etc......597	Total.....7.710	
Oat Straw.....18				
Salt.....1½ oz.				

The cows are milked in the morning between 2 and 3 o'clock; by 6 o'clock all has been bottled and boxed; at 6½ o'clock it leaves the neighboring railway station for Paris, and at 9 A. M. reaches the city. The second milking is at 3 P. M., which reaches Paris at 10 P. M., ready for early morning

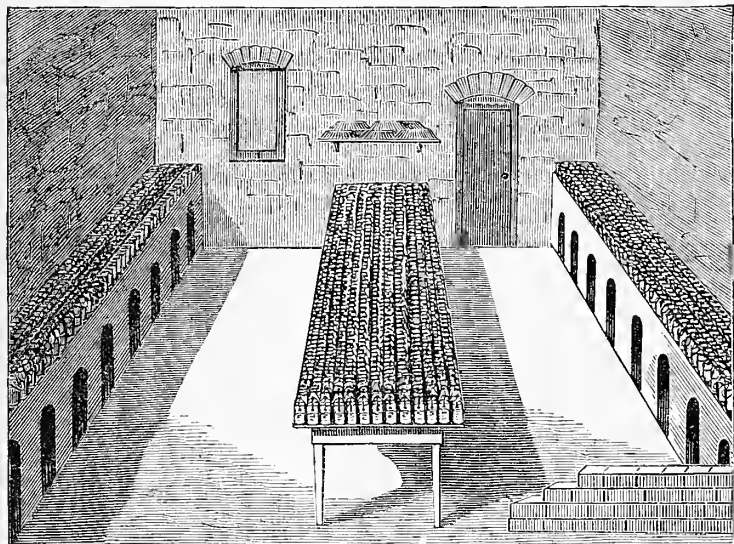


Fig. 7.—THE PACKING-ROOM OF ARCY FARM MILK DAIRY.

delivery. The daily average of sales, at this mid-summer season of the year, is 840 litres (837½ quarts).

A secondary advantage of great importance has followed this new departure in the management of Arcy Farm,—the production of stable-manure has increased very largely, and at the present time very nearly equals the demand. A large manure pit, walled around with stone, will be noticed at the center of the court-yard (fig. 1), and near it is a reservoir into which the liquid manure is conducted by underground pipes. The improved cultivation of the fields has been pushed forward with unabated activity, and at the time of our visit, when the harvests were being gathered, the vast fields of wheat, oats, and lucern, presented an appearance of remarkable thrift. Mr. Nicolas now has 815 acres capable of cultivation, which are divided as follows: one-seventh devoted to beets, potatoes, buckwheat, and carrots; one-seventh, fallow ground; two-sev-

enths to wheat; two-sevenths to oats, rye, and barley; and one-seventh to lucern and clover.

As on nearly all French farms, considerable attention is paid to the cultivation of lucern, a relative of clover highly prized as feed for cattle. It bears much larger crops than clover, growing two to three feet high, and two or three crops are cut each year. The harvested wheat is stacked and not thrashed until required for use or market. The thrashing is done by steam power, which is also utilized, in connection with improved machinery, for sorting the grain into different grades, according to size and weight of the kernels, and preparing food for the pigs and sheep.—The sheep house is substantial and convenient, and contains about 1,000 head of French and English breeds.—The most improved farm tools are used, including several of American make; and in every department Mr. Nicolas has taken advantage of all the facilities which modern science offers. By these, with his native ingenuity and good sense, he has, in six years, converted a most unpromising farm into one that is a model in every respect, and that is, with fine future prospects, more than self-supporting now.

PARIS, August 18, 1878.

G. W. W. H.

Among the Farmers.—No. 34.

BY ONE OF THEM.

Influence of Early Breeding on Milk.

Well fed heifers, not too fat, incline to breed at about 7 to 10 months old. This is too young to tax the young things with the cares and trials of maternity, and if persevered in, will certainly lessen the quantity of milk a herd is capable of producing, primarily by reducing the size of the mature cows. However, as we generally desire a fair size to accompany great milking qualities, we must plan accordingly, and allow heifers to breed early enough to be making their strongest, and best growth, just when they come to calving and milk. This time, with some breeds, is at about two years old, with others, six

months to a year later. A distinguished breeder of Princess Shorthorns not long ago remarked, that milking qualities were the easiest possible points to breed in Shorthorns, as is shown by the certainty, almost, of Shorthorn grades being large milkers, if put early to breeding, and by the fact, that in New England where they are bred and treated like cows of any other breed, or of no breed, they are all milkers. My friend was defending, or extenuating the practice of so many breeders of Shorthorns, who breed only for beef points, that is, perfection of form, early maturity, quick growth, early and quick fattening, good handling, etc.—points more difficult to secure, and to maintain, than milk giving.

Influence of the Dam and Sire.

It behooves a man who is himself a tyro in breeding, and a learner in all things, to state his own views modestly, especially when they clash with those of wise men and teachers. I have seen so many good cows that had good daughters, and daughters' daughters to half a dozen generations, all by nameless and famcless sires, that I am hardly willing to accept the view that milking qualities are more likely to be inherited from the sire's dam than from the dam herself. We can of course all remember many good cows whose calves were not worth raising, and we know but too well that very extraordinary cows rarely have daughters which equal themselves. Nevertheless, I am inclined to place the influence of the dam above that of the sire in

breeding pure stock for milk, as well as in not breeding at all, so to speak,—but in simply raising milch cows in the come-by-chance way of most farmers—that is, in breeding "scrubs." The influence of the sire in breeding for milk is, however, by no means to be neglected or lightly regarded. It is so large that many writers regard it as greater than that of the dam. In the production of grade cows, it is quite likely that the influence of the sire is the more potent in respect to milk production; but how it would be were cows of milk-giving breeds bred to scrub bulls, it would be hard to tell, for experiments are very few, and it is to be hoped that they will not be multiplied.

The Form of a Milch Cow.

A good sized udder and milk veins are invariably essential. The shape of the udder and teats is not imperative, but they must be capable of producing, storing, and delivering the milk. We all look for a well-quartered udder, for nothing is more annoying to the milker than to have one hand finish its work long before the other, which will be the case unless the quarters hold about the same quantity of milk, and the teats are about equal in size and delivery. The teats are to be squarely placed, tapering, large enough to fill a man's hand, and not fleshy. Besides this, the perfect milch cow should be capacious in body, indicating feeding capacity, thin and light before, with thin neck and shoulders, sharp withers, light head, etc. She should be lower in front than behind, because she needs room for her large udder, and length of leg to keep it from hanging too low, while it is an advantage to have short fore-legs, which brings her head nearer to business.

This gives the general idea of the "wedge shape" in milch cows so much talked about, but only in respect to the side view. The view from above would be similar, that is, broad behind, the broadest point being at the hips and thighs, and the lines converging toward the head. This matter of form is important, and it is valuable in bulls, also, as being likely to be transmitted to their daughters.

The milch cow must have bone enough in the leg to carry a capacious and heavy body. In this point they rarely fail, yet occasionally, upon rough pastures, we find that more bone and stronger joints would be of service. The head, horn, and tail, can hardly be too light, and happily we are taught to regard these, when small, as points of special beauty.

In Guernsey the proverb runs "that a long head indicates much milk"; and on that island I found especial value placed upon a broad muzzle and big mouth, on the ground that with such a mouth the animal could and would quicker fill herself and lie down, and it is quite true that then more of her food will go to milk production, and not to supplying the wastes of the muscular system, increased by prolonged exercise.

The thighs should be thin through the muscular portion above the hocks, for this gives room for the udder, and thick thighs occasion irritation in walking when the udder is distended. A thin neck and shoulders are usually found accompanying thin thighs, but not always. Meaty withers and a thick neck are a bad indication, and rarely if ever are found on a first rate milker.

The Value of the Guenon Milk Mirror.

Taken with a good udder and milk veins, good digestive functions, and capacity for food, good health, and thrift, the Guenon Milk Mirror is a valuable indication of both the quantity and duration of the flow of milk. This seems to be demonstrated by the experience of thousands who have given the subject careful study, and I have never yet met the man who ridiculed it, and called it "folly," who was able intelligently even to outline the prominent types.—The number of calves which do well or ill as milkers, very nearly as indicated by their milk mirror, is so large, that one of the principal practical uses to which a knowledge of the Guenon system can be applied is in selecting calves to raise—and of course to those who buy cows it comes equally well in use.

The enormous exports of dairy products which are now leaving the country, and for which a steady flow of gold is coming in, make it worth while for

ns to do all that we can to breed, select, raise, and use the best milch cows possible, rather than be satisfied with cows that average only 6 or 8 quarts of milk a day. Breed has much to do with this; selection probably more than breed, and many a cow which gives 16 quarts of milk a day, or even 20, eats no more than one giving half or less than half that amount. Let us keep the best; but first let us know which are our best cows.

Talks on Farm Crops.—No. 21.

By the Author of "Walks and Talks on the Farm,"
"Harris on the Pig," etc.

"It is a great mistake, Deacon," said I, "to feed the small potatoes now, when we have abundance of succulent food. They will keep until next June."

"True," replied he, "but I tell you a few bushels of small potatoes, boiled or steamed, and mashed up while hot with corn-meal, will push forward young fattening pigs very rapidly."

"No doubt about that," said I, "but will they not be worth more next spring to cook in the same way for sows that are suckling pigs? Now you have soft corn, and pumpkins, and sweet apples, and the leaves of cabbages, mangels, turnips, etc., which must be fed out soon or not at all."

With me, the fall is the busiest season of the year, and in determining how work should be done, this has to be taken into consideration. It is for this reason that I pit my potatoes in the field where they grow. Last year I had them dug by the job—paying 5 cents a bushel, and the men piled them in heaps containing about 30 bushels each. We aimed to place the heaps on high, dry ground, where the water could drain off. We make the heaps as high and compact as possible. Then cover them with straw about six inches thick, and throw on five or six inches of loose, mellow soil.

"It is a good deal of work," said the Deacon, "and it is better to put the potatoes in the cellar."

"It is not half the work one might suppose. With two teams and plows, and three men with shovels, I think I can cover 1,000 bushels in a day. We plow round and round the heap, throwing three or four furrows towards it. Then plow the same ground four or five times, setting the plow to run as narrow as possible. In this way the plow leaves very little work to be done by the shovels, and the repeated plowings makes the soil fine and mellow. The horses soon get used to it, and will go round and round of their own accord. You should have a short evener, and whiffletrees; and the right hand half of the evener should be two or three inches shorter than the left hand half, because the high horse has much further to walk than the off horse, and ought not to have so heavy a load to pull. You cannot plow too much or too deep. Loose, mellow soil is a capital non-conductor of heat."

"Then," put in Charley, "before winter sets in we repeat the operation. Last year we did it when the ground was frozen so hard that the men said we could not plow. But we found the loose soil around the heaps scarcely crust over. We covered them with straw again, and threw on another layer of earth, and did not lose a potato by frost, except in one heap nipped at night while digging."

"We had a very mild winter," said the Deacon.

"True," said I, "but no matter how severe the winter may be, a heap well covered with two layers of straw with a layer of loose earth between, and another on top, will be in no danger of freezing, and this is especially true if you are careful to plow up a quantity of loose dirt all round the heap. You cannot plow too much."

We pit our mangel-wurzels in the same way—only that we make much larger heaps.

"When we have force enough," said Charley, "to keep three teams going lively, it is real fun to harvest a good crop of mangels. We have over ten thousand bushels to get in this year, and the best we have ever had."

"You draw them in carts," said the Doctor, "and dump them into the pit?"

"No," said I, "we have sometimes done so, but we usually draw them on stone-boats, tops and all,

and top them at the pit. We have a man to help the driver to pull and load the mangels. We have three teams. One is loading up all the time, another is going back and forth, and the other is at the pit. But you must recollect that this kind of work will not run itself. You must be there to lend a helping hand when needed. There is always a weak spot, and you must be prompt in detecting it."

"I do not know what you mean," said the Doctor. "It seems a very simple matter."

Charley laughed. He knows from experience that it is not half so simple as it seems. If left to themselves the men will soon get into a snarl.

"Sometimes," I replied, "the man and driver who are pulling and loading the mangels will get behind. That is the weak spot, and you must take hold and help for a few minutes, and put a little more snap into them. Then again, the men at the heap will not get through topping in time, and there will be two loads there instead of one. That is a weak spot; and you must be on hand to help the men tip over the stone-boat and let one of the teams go for another load of mangels. In this way you can make everything work smoothly, and your head will be worth two pair of hands—especially if you use your hands as well as your head!"—"What do you mean," asked the Doctor, "by a pit?"

"Nothing more," said Charley, "than a deep wide dead-furrow. We make it by plowing three or four furrows on each side of the center of the proposed pit. We repeat this three or four times, forming a dead-furrow four or five feet wide and two feet deep. A little work with a shovel levels off the bottom, and the 'pit' is ready for the mangels. We build up the mangels, about four feet above the level of the ground, like the roof of a house, and cover them with straw and earth, just as we do potatoes, but with less soil and more straw for the first covering, as the straw absorbs the moisture from the mangels. Last year we had so much warm weather, that the mangels commenced to grow before Christmas, and we had to open the pits. But we did not lose a dozen mangels out of 10,000 bushels, either from freezing or heating."

"I think the danger of heating has been greatly overestimated," said I. "The real point, as Charley says, is to use a plenty of straw for the first covering, and only soil enough to keep it in place, say three inches thick. You want to use the plow freely for four or five feet on each side of the pit. Do not let the mangels freeze, but the nearer they come to it, the better. The leaves not wanted for feeding, are thrown on the sides of the heap. The pit can usually be left in this way until about Thanksgiving Day. Perhaps if you do the work a few days before, you will have an additional reason for thankfulness. We cover the mangels as we do potatoes, with two coats of straw and two layers of soil. If the work is delayed until the heap is reduced nearly to the freezing point, you need not, in ordinary winters, trouble yourself about ventilators, though we usually make a ventilator every eight or ten feet, by pulling some straw up through the layers of soil."

"You have a famous lot of cabbages," remarked the Deacon, "I suppose you will try to winter them."

"Yes," said I, "and the more cabbages I raise the better I like the crop. We have over 25,000 head this year, and the cows and sheep must regard them with fond anticipation. If we have as good success in keeping them through the winter as we had last year, I shall put out more next season. There is very little trouble in harvesting them, and they are a valuable food in the early spring."

"We plow out a deep dead-furrow," said Charley, "put two or three cabbages abreast, heads down, and then with a plow, set narrow, throw several furrows of soil on them, finishing with a shovel."

"Not forgetting," said I, "to plow the ground on each side three or four times over, and as deep as possible. You cannot have too much fine, mellow soil about them. But the later you do the final covering the better. Be very careful not to bury them where there is any danger of standing water."

"We had capital luck," said Charley, "in keeping our cabbages for seed last winter. We saved about a hundred of the largest and best heads in the field, and put them into a dead-furrow, like the others,

except that we put the roots down. We only lost two cabbages out of the lot. I should think every farmer would raise his own cabbage seed. It is very little work. When we were setting out our mangels for seed, in the spring, we set out a row of the cabbages. The rows were 3½ feet apart, and the cabbages 2½ feet apart in the row."

"Before winter sets in," said the Deacon, "you must attend to your corn-fodder. I suppose you intend to let it remain in the field, and draw it as you want it in the winter."

"Yes," said I, "we know that is a good plan, though I presume we shall some time discover a better. We cut the fodder with a self-raking reaper that threw the fodder into bundles ready for binding. We have about 15 acres, all of it good, and some of it so thick and tall that we thought the reaper would not cut it. But it did the work far better than it can be done by hand. We let the bundles lie a few days to wilt, and then bind them up just as we do wheat, and then set them in stooks holding about a dozen bundles. We shall put nine of these stooks into one, and put a couple of bands around it. Mr. Hooker uses willows for bands. When these cannot be had, tarred rope is good, which afterwards, if saved, will be found very handy about the house and barns. In tying these large stooks, we use, to bring them into shape, a quarter-inch rope, about 15 feet long, with a loop at the end, this is put around the stook and drawn up tight, and then the tarred rope is put out, and the other removed. If the work is properly done, the stooks will shed the rain and the fodder will keep perfectly. The only difficulty we have experienced, is from the butts of the stalks freezing to the soil. This is especially the case if the stooks are made when the ground is soft and muddy, which work should be done while the ground is dry and hard. The stook should be made as upright and compact as possible. It is a job that the farmer must see to himself. It requires a little common sense."

"The farmers of New England and Eastern New York," said the Doctor, "will yet raise great quantities of corn-fodder not merely for milch cows, but to fatten sheep in winter."

"They cannot fatten them without grain," said the Deacon, "and the Western farmer will always have the advantage of getting cheaper corn than the farmers of the Eastern States."

"That is true, but Eastern farmers can buy deoorticated cotton-seed cake cheaper than those of the West can. And there is nothing better for sheep, and nothing that makes richer manure than that. Corn-fodder and cotton-seed cake will enable the Eastern farmer to fatten sheep in winter with great profit. We could ship thousands of sheep to England every week, if we only had those that were good enough and fat enough for the English market. Good mutton is worth more in England than beef, and live sheep will stand the voyage better than live cattle. Ten acres of corn-fodder and ten tons of deoorticated cotton-seed cake would fatten 200 sheep, with say a ton of hay and two tons of bran for an occasional change of food. There is money and manure in the business."

"Yes," said the Deacon, "and there is clean land and a better and higher system of farming. A good crop of corn-fodder will clean land better than a summer-fallow."

"I am not so sure about that," said I, "but at any rate I know of no crop that leaves the land in such admirable condition for barley, or potatoes, or mangels, or spring wheat. My corn-fodder this year is on old sod land that has not been plowed for many years, and we did not put a hoe into the field; we cultivated once between the rows, but could not a second time, as the corn got too big for the horse to get through. The land now is in splendid condition, with scarcely a weed to be seen in the entire field. The sods have withered nicely and the soil has a remarkably rich look. The corn-fodder shaded the ground completely, and this is favorable for decomposition and nitrification."

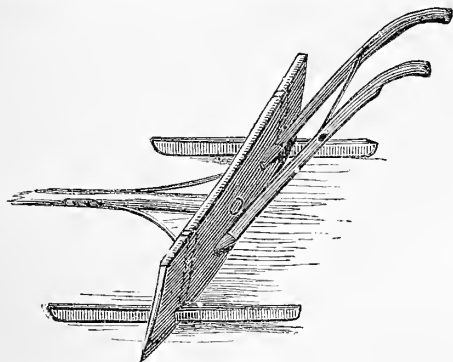
"But much of the land in New England," said the Deacon, "is too stony and hilly to plow."

"Very well," said I, "then pasture it with sheep, and give the sheep from half a pound to a pound

each of cotton-seed cake daily. The sheep then make rich manure, and carry it on to the hilly portions of the land, where it is so much needed."

An Improved Road Scraper.

If the operation of an ordinary road scraper is observed, it will be seen that it is faulty in one important point, viz., that it leaves the hollows as it finds them, if indeed it does not scrape them out deeper. It simply smooths the surface, but does not level it. By the simple addition of runners, by which it is kept from falling into the hollows, it will draw earth into them, instead of scooping them out. The runners are raised an inch or two

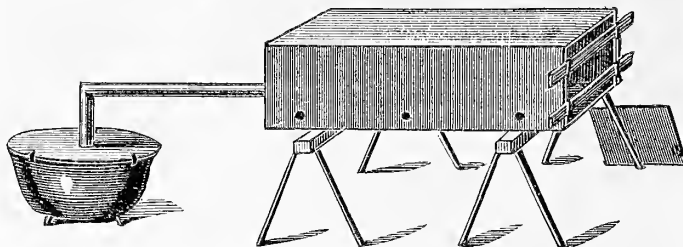


FOR LEVELING ROADS.

above the bottom of the scraper. It will thus scrape up the loose soft earth and deposit it where needed, that is, in the hollows, thus leveling as well as smoothing the surface. The form of the improved scraper is represented in the engraving.

Chest for Steaming Timber.

An apparatus for steaming timber for bent work, such as ox bows, hames, ribs for boats, etc., or for basket work, may be constructed as follows: A box of 2-inch plank, is made of sufficient length, and about 12 inches wide and deep. Three cross bars are fitted at the points shown in the engraving, and about an inch above the bottom. The timber rests upon these so as to expose every part to the steam. The movable door is held in place by bars, passing through staples as indicated in the engraving. The box rests upon trestles about four feet high. A common cauldron or boiler may be used to make the steam. This may be hung upon a tripod, or set in a rough arch of stone. A wooden cover is fitted to the top and held down by clamps or weights. A pipe made of wood or metal, connects the boiler with the steam box.



CHEST FOR STEAMING TIMBER.

dance, he would "occasionally place a handful of leaves on the ground in the yard, the cows would drag it around, the pigs eating it *all*, (as I supposed); but since it got more plentiful, I one evening placed a good armful on a high platform, where the cows could reach it, but the pigs could not. The first night I could not see that any had been eaten, but it was dragged about the yard; the next evening another fresh armful was given, and nearly all eaten. The third night another lot was eaten entirely; since then we have been feeding regularly, each evening, about 50 lbs. per cow, the cows being in pasture during the day."—Mr. G. A. Wilcox, Gasport, N. Y., experimented with $\frac{1}{2}$ acre, and while the plants were a fine sight, none of his animals, save pigs, would eat it. Being determined to ascertain whether the plant was an-out-and-out humbug, or if it were not the strangeness of appearance and smell that caused them to refuse it, Mr. W. went systematically to work, and met with most gratifying success. As there are no doubt others who have the plant and can not utilize it, we give Mr. W.'s method: "To teach stock to eat it, they should be confined, and after they have fasted over night, give them the Comfrey prepared as follows: Run some leaves through a cutting machine, or cut them up with a butcher-knife; wet the cut leaves and mix bran or meal and a little salt with them; feed this, and when it is eaten, give hay, then again some of the Comfrey and so on, but gradually increase the Comfrey and decrease

to receive 3-inch bars, placed three inches apart. The ends of these bars are also rabbeted to match the frame, and are securely nailed in position. Pieces of wood are fitted into the rabbets, between these bars, as a finish. The door should be hung with weights, as shown, so that it may be raised to open it, and when not in use will be out of the way. An extra door of this kind, which may be fastened, will be found very useful in the summer time, when free ventilation is much needed.

Prickly Comfrey—Failure and Success.

Having been the first in this country to describe and figure Prickly Comfrey, we should have been glad to record its complete success. Our first knowledge of failure came from our own experience. As already stated, the plant grew and produced abundantly, but the cows would not eat it at all, and the horses, which accepted it at first, refused it after they had been once or twice at pasture. Similar complaints came from others, while some correspondents wrote of it in high terms. The case seems to stand at present, thus: The plant, so far as heard from, is hardy, produces abundantly, starts early in spring, and soon gives a cutting, withstands the drouths, and is not injured by moderate frosts, but gives fresh feed quite late in the season. On the other hand animals, in the case of cows probably the majority, will not eat it, but by taking a little pains to make them acquainted with it, they soon acquire a taste for, and consume it readily, and it appears to be a nutritious food. The question seems to be: are its good qualities sufficiently marked to make it worth while to be at the trouble of teaching animals to eat it? As an aid to a decision, we give the experience of two correspondents, both of whom at first met with failure. Mr. Frank Spencer, Oakland Co., Mich., some two months ago wrote complaining of the Comfrey as a humbug; he has since written that he had decided too hastily, "having had better experience since then." At first, not having an abun-

the ground feed and hay. In three or four days Comfrey may be fed exclusively, and stock will become more fond of it daily. Cows will take to it readily in the spring before going to grass; when they once acquire a taste for it, they do not forget it. It will improve the yield and flavor of milk very much. Comfrey and water will grow pigs fast. Sheep will fill themselves so full that they look bloated, but not the first time it is offered to them. I have 2,000 plants in a rayne, fenced in; they were making a rapid growth, and when they were three months old the cattle broke in, and before they were discovered, had eaten every leaf and spear; as they left good pasture for this, it does not look much like forcing." Mr. Wilcox sends us testi-



A SUPPORTING HALTER.

monials from the President of the Niagara County Farmer's Club, and other citizens, to the effect that they selected three plants of Comfrey in his field, cut the tops, and weighed them; on the 1st of July following, they cut the same plants again; total amount of the two cuttings 61½ lbs. They also testify to the readiness with which it was eaten by his animals. At this rate the yield up to July 1st was more than 49 tons of green fodder to the acre.

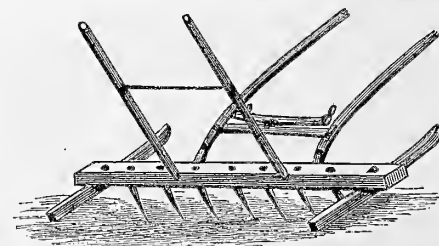
Mr. Ashburner, of Va., writes that the leaves should be treated in the same manner as clover; but that, if very succulent, they will take a few hours longer to cure. He suggests sprinkling a little salt over it when stacking the cured leaves.

Halter for Swimming Horses.

A frequent necessity of swimming horses across streams in new countries, renders desirable a properly constructed halter for the purpose. That here described is not only useful for securing the horse, but also for supporting its head from a boat, when necessary because of weakness from long swimming, or an attack of cramp. The halter (see the engraving above), is made of a rope 30 or 40 feet long looped at the middle. At the upper part of the loop is a throat latch, which is fastened by passing the short wooden bar through the small loop. Under the nose-band is a piece of netting, so fastened as to come under the horse's lower jaw, and support the head when needed. A halter of this kind is used for landing army horses in the East Indian ports, at which, having no harbor, ships are obliged to anchor two or three miles from shore. They are also used in crossing the large rivers of that country where there are neither fords nor bridges.

Cultivator for Wheat.

Those who desire to test the question of cultivating wheat, may provide themselves with a simple

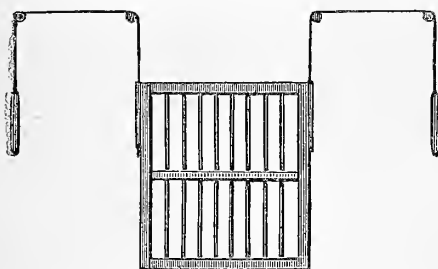


TEMPORARY WHEAT CULTIVATOR.

implement for the purpose. Wagon shafts are fitted to a piece of 4x4 timber, which is provided with a pair of short smooth runners, as shown in the engraving. Wooden teeth sloping forwards are inserted into the timber; and a pair of handles,

Ventilating Door for a Stable.

A secure stable door through which a current of air may be admitted, is made in the following manner.



TO SECURE VENTILATION.

The engraving shows a frame of inch and a half timber, with an inner cross-piece. The inner edges of the frame, and both edges of the inner cross-piece, are rabbeted for one inch in width,

consisting of simple straight rods, affixed. This may be put together in a short time, and will allow the question, whether or not it is desirable to go to further expense for a more complete and effective implement, the "wheat-hoc," to be fairly tested.

A Cider and Vinegar House.

A plan for a building devoted to the making of cider and vinegar, is given in the accompanying engravings. It may be made of any desired size,

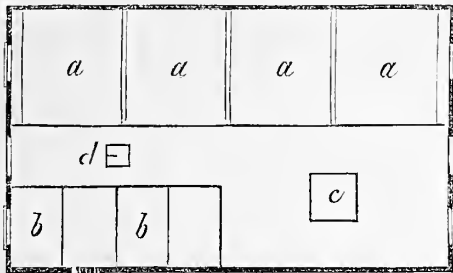


Fig. 1.—CIDER HOUSE—UPPER FLOOR.

but if less than 24 feet wide, it will be found inconveniently narrow. The upper floors, and the roof, should be made high,—at least 9 feet—that it may be airy. The upper floor, shown at fig. 1, contains bins *a, a*, for the storage of apples, and to hold the pomace, *b, b*, for 12 to 24 hours, for mellowing and coloring; a grinding mill, *c*, and a trap, *d*, with shoot leading to the press below. A wide door should be made at both ends, and a window in each bent upon either side, with slatted shutters, for ventilation and shade. The lower floor, fig. 2, contains the press, *D*, and frames, *E*, to hold the barrels. These frames, or skids, consist of parallel timbers, fastened together by cross pieces mortised or dovetailed into them, and raised 18 or 24 inches above the floor, by short posts, or legs. A second tier may be built up above the lower one, and perhaps two or three feet in the rear, so that the cider may be readily drawn from the upper into the lower barrels. The bins for the apples should be made of open slat work, and the bottom raised a few inches from the floor, and sloping from back to front. Then the apples gravitate to the front and lower side, rendering the emptying of the bin an easy matter. This form of bin also prevents the heating of the apples, and keeps them in the best condition.

Ice.

Every year the use of ice on the farm increases; and it is surprising, with all that has been said and published on the subject, that every farmer in the land has not some means of keeping a store of ice for summer use. Ice is not merely a luxury, but it becomes a necessity so soon as its value is known

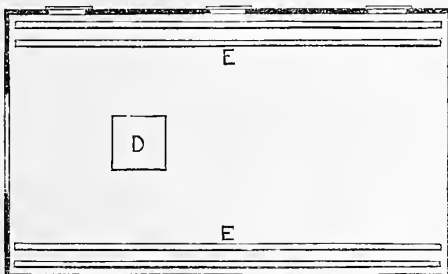


Fig. 2.—CIDER HOUSE—LOWER FLOOR.

by experience. As with many others of nature's gifts, however, its very abundance causes it to be disregarded; and this mine of usefulness is formed once a year, perhaps almost at the farm-house door, and is allowed to pass away in spring unworked, save by not more than one farmer in ten. Ice in the dairy is next to indispensable, for holding milk at a proper temperature, and for use in working and keeping butter. This

fact is recognized in all well regulated dairies, and especially in those where high-priced butter is made. Successful dairymen state that the gain in the price obtained for their products by the use of ice, many times repays the cost; and in preserving meats, etc., its worth is to be estimated by computing the total value of the things kept from spoiling. Numerous plans of substantial ice-houses may be found in the fall and winter numbers of the *American Agriculturist* of past years. Figure 3, illustrates an ice-house that can be quickly erected at a very slight outlay for materials, and at the cost of only a few hours' labor. The size is determined by the length of the planks or boards to be used. Nine posts, rough, sawed, or hewn, of suitable height are provided, and two put up at each corner, as in figure 2, resting upon a block of wood or a stone, or set in the ground. At one side of the front, the ninth post is placed, to serve as one side of the door; the bottom planks all around, are nailed to the posts, which may be more firmly secured in place by cleats connecting those at each corner; the front posts are a foot or so longer than the others, to permit of a shed roof. A plate of light scantling secures the tops in place. Now it is ready for the ice. First, put on the ground a layer of sawdust, shavings, or cut hay, so that it will be at least six inches deep, when firmly packed down. Then put in the first tier of ice, keeping the blocks a foot away from the plank wall; fill the space solidly with the saw-dust or other packing material (*a*, fig. 2); then the second tier of ice; next, put in position more planks, and so on, until the house is filled; storing the ice, and carrying up the wall together, and filling in between with saw-

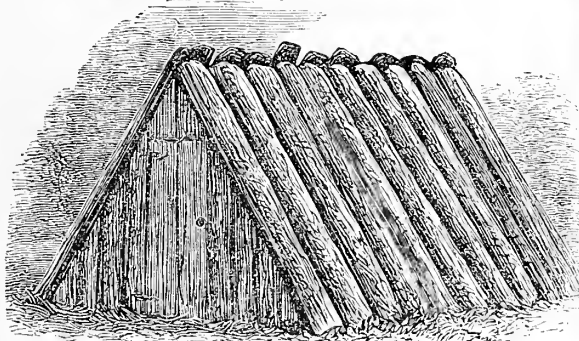


Fig. 1.—ICE-HOUSE AT DONALD G. MITCHELL'S.

dust, etc., as the work progresses. The planks need only be slightly nailed, to keep them up when the ice is removed, as they will be held in position by the posts without, and the pressure from within. A door (*b*), is made by simply using two lengths of plank on the front side, as indicated by the posts in fig. 2. When the house is full, a thick layer of the packing material is also put on top of the ice. Drainage is secured by placing the structure on sloping ground. A roof of slabs, a thatch, or anything to keep out rain, is sufficient. With a little care and taste in the construction, this may be made quite pleasing in appearance—as by the use of unhewn cedar posts, and making the slabs of the roof of even length, and to project at the eaves considerably. Fig. 1 represents an ice-house seen on the place of Donald G. Mitchell, made picturesque by a roof and ends of rough slabs. The main part of the ice-room is below the surface of the ground, and may be constructed of stones or timber. An ice-house like those suggested here, or even one of greater pretensions, may have its appearance improved by the free use of climbing vines; these answer not only as an embellishment, but serve a useful end in breaking the force of the sun's rays and keeping

the building much cooler than it would be under full exposure. It costs no more to make the smaller farm buildings tasteful and picturesque in appearance, than to have them look ugly and cheap.

Farmers' Clubs.

Make Use of the Knowledge of Your Neighbors.

The season of fairs has passed, and with most satisfactory results. Farmers who have attended have gained much in knowledge of the methods

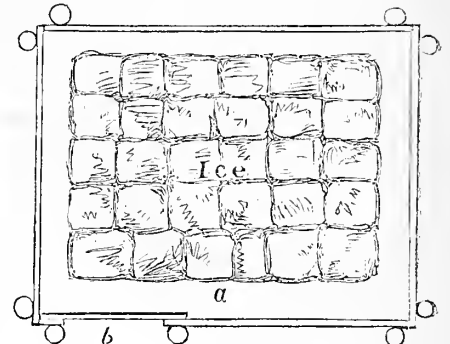


Fig. 2.—GROUND PLAN OF FIGURE 3.

and experience of others. Premiums won are satisfactory evidence of the correctness of the system which produced the winning articles. Failure to win should teach us how to improve our practice, that we may obtain better results. Many have found personal contact and conversation with others to be one of the best features of these exhibitions. And it is this phase of the fairs that may and should be extended through the winter by means of farmers' clubs. A large number is not essential to the success of such an organization; nor even is an elaborate constitution necessary. A half dozen interested men meeting once a week at each others' houses, to talk over farm matters, will derive much good from the association. Of course, the larger the number participating in the discussions, the more valuable will be the results, and as many as possible should be induced to join. From a half dozen upward, the simpler the organization the better. Where there are a constitution and by-laws, much time will be wasted in amending and tinkering them. An assemblage of farmers needs only the rules of common courtesy to govern it. We once heard Agassiz say: "Why all this talk about by-laws, a company of gentlemen need no by-laws." A large association will of course need some rules, but the fewer and simpler these are, the better. A good way is, to have the host as chairman of the meeting at his house; it should also be agreed upon

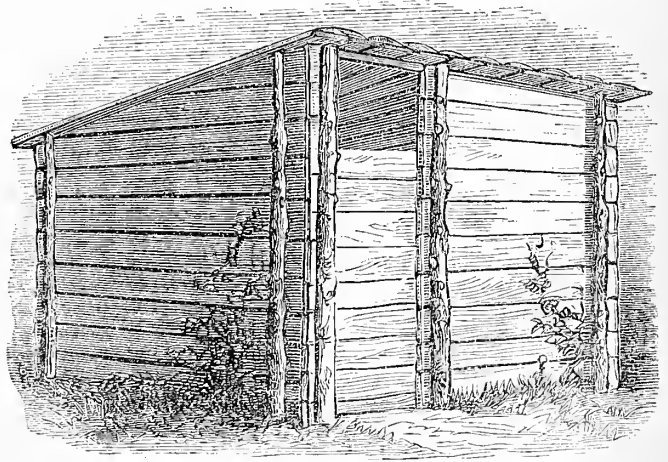


Fig. 3.—CHEAP AND PICTURESQUE ICE-HOUSE.

at each meeting, what is to be the question for discussion at the next, and the place appointed. Then let the talks be quite informal, with no special leaders, each putting in his word according to his knowledge, and as opportunity may offer, guided as to time, however, and lead on by the chairman.

This small beginning may lead to a large organization; requiring by-laws and regular officers, and meeting in a hall. But the first will teach how to manage the more cumbersome affair. The social element is not to be forgotten in any case; for the sons, and wives, and daughters will enjoy, and add to the enjoyment of the meetings. It is this feature which makes the Grange the success it is, in some localities, and the same is true of many successful farmers' clubs that we are acquainted with.

Where means and numbers permit, it is a very wise plan to have a library, which, if no hall is held by the society, can be in charge of the village postmaster. Fifty dollars, or even less, will purchase a nucleus for a good library, which would add interest and give more permanency to the club. It is well to exhibit at the meetings specimens of farm products, for comparison and criticism. Oftentimes one can learn more by the intelligent comparison of specimens produced by different methods of practice, accompanied by statements of yield and culture, than by hours of discussion. No occasion is more favorable for this than these small meetings where there is not much else to distract attention.

The large number of farmers' clubs which we hear of as being organized, as well as the Grange movement, is evidence that farmers are growing in the idea of association as a means of advancement and profit—a fact which commerce and the trades have long held as a cardinal principle of success. The isolation of farmers renders it of even more importance that they should associate for mutual strength and instruction, than for the people of towns. Farmers should club together if for no higher motive than mutual protection against the various imposters and swindlers that too often find them an easy prey. A farmer who feels that his neighbors will make common cause with him in such cases can more effectively resist the demands of sharpers than when alone and unaided. But, beyond and above this, such organization and co-operation gives impetus to thought, diffuses intelligence, creates ambition to excel in farm practice, adds more of interest to the calling, makes it really higher and nobler, and finally results in greater success, larger crops and subsequent profits, greater happiness, and develops and strengthens in the young their natural love for the farm and the country.

Cider Vinegar.

The vinegar that we daily use is, or should be, a weak acetic acid. It is a well established fact that much diluted strong acids, such as the sulphuric (oil of vitriol), have been sold as a substitute for vinegar, on account of greater cheapness. Though we have never seen any of this false vinegar, the examinations by "Boards of Health" leave no doubt that it occurs, and consumers should be on their guard against it. Vinegar being acetic acid, the only practicable method of preparing this outside of chemical laboratories, is from alcohol in some form. By the action of the oxygen of the air upon alcohol, that compound is broken up, and a new one—acetic acid, results. All our vinegar making has for its object the free exposure of some weak alcoholic liquid to the air. The source of alcohol is sugar, and whether we use the juice of apples, grapes, or watermelons, or maple sap, whether molasses and water, or other sugary liquid, the changes are: first, the formation of alcohol from the sugar in these liquids, and next, the conversion of the alcohol into vinegar. In one method of making vinegar, alcohol, in the cheap form of whiskey, and largely diluted, is the material used. Whatever sugary or alcoholic liquid is employed in vinegar making, the product, so far as the sourness—the acetic acid—goes, is exactly the same in all. If alcohol (in the form of whiskey) and water are used, the vinegar will be nearly colorless, and of a pure sour taste; if the sugar in apples (cider) is used, the vinegar, besides being sour, has an aromatic quality, or fragrance, belonging to the apples, and will also be colored, while that from wine and from molasses each has a different but peculiar flavor. The domestic use of vinegar is for two purposes: to preserve vegetable substances—pickles—and as a

condiment to eat upon various kinds of food at the table. For pickles the chief requisite is a proper strength, and though a high-flavored vinegar will make better pickles, its color is an objection, and many persons, for the sake of the looks, purchase for their pickles colorless whiskey vinegar, under the name of "White Wine Vinegar," sacrificing quality to appearance. Whiskey vinegar is just as wholesome as any other, but is quite without the peculiar aroma of cider vinegar, which all who are good judges of such matters prefer for table use. To convert any sugary or alcoholic liquid into vinegar, this liquid must contain sufficient alcohol, or sufficient sugar to make the required alcohol which



VINEGAR GRADUATOR.

is to be converted into vinegar. No process of manufacture will make vinegar out of a liquid that does not at the outset contain the materials to make it from, either in the form of alcohol or sugar. Our present purpose is with Cider Vinegar, and though apples vary greatly in the richness of their juice, even common fruit contains enough sugar—though disguised by the acids in the apples—to make vinegar sufficiently strong for family use, while the best apples are so rich that the resulting vinegar will be unpleasantly strong, and may be properly diluted before using. The ordinary method of making vinegar is to put the cider into casks, open at the bung, and leave it until the change takes place spontaneously, which may be one or two years, or even a longer time, according to its strength and the conditions under which it is exposed.

The conversion into vinegar may be greatly hastened by increasing the exposure of the cider or other liquid as thoroughly as possible to the air. One method of effecting this, and which was patented a few years ago, was to pass continuous streams of fine bubbles of air through the liquid by means of a force-pump. Another method is to allow the cider or other liquid to slowly trickle over a series of inclined shelves inclosed in a box or closet; an apparatus on this principle has been patented. Another method is to allow the liquid to pass slowly over shavings packed in a vat or cask, in which are holes near the bottom to allow an upward current of air; beech-wood shavings are preferred, as they impart no flavor; maple is next best. What is sold for "White-wine Vinegar" is made with whiskey, water, and some old vinegar as a ferment, passed through such a "graduator" as it is called. This process, which is only profitable on a large scale, is too full of details to give here, but the same principle may be used to greatly aid in converting cider into vinegar. A cask has a row of inch holes bored near the bottom, these should be made with a downward slant, there should also be several holes in the bottom. The cask is set upon a board channeled with grooves to convey the liquid to a pail or other vessel, as shown in the engraving. Shavings of beech or maple are made with a double-ironed plane, so set that they will be rather thick, and have a strong curl; in the absence of these woods, corn-cobs may be used; either shavings or cobs should be well washed, dried, and soaked in strong vinegar. The cask (the head being removed) is filled with shavings, placed in closely, but not crushed; or cobs laid in

regularly, each layer crossing the last, filling the cask to within a few inches of the top. A tub of suitable size for the top of the cask has a number of holes bored in the bottom, through which the cider will trickle slowly; if too small, these holes will clog up from the swelling of the wood, or from impurities in the cider, and it is better to make them with a large gimlet, and partially stop them with sticks whittled to fit irregularly, to allow the cider to pass, or pieces of lamp-wick, with a knot in the end, may be drawn through them; any contrivance that will allow of a slow trickling will answer. The tub should not fit the top of the cask closely, as there must be a space for a current of air. Cider being placed in the tub, will fall slowly upon the shavings or cobs, spread over them, and expose a great surface to the air; the chemical action of the oxygen of the air upon the cider causes heat, and the air will rise, thus starting a current, fresh air passing in through the holes below, to replace that which passes out between the tub and the edge of the cask. By passing cider successively through the cask, or through a series of three or four of them, it will soon be converted into good vinegar. The chief use of this "graduator" is to aid in vinegar making, rather than for making it solely by its use. The vinegar house should be heated by a furnace or stove to 75°; the casks or barrels must not be filled within several inches, in order to allow a wide surface to be exposed to the air; in regular establishments, where there is old vinegar, a few gallons are added to each cask of cider. Heat being kept up and regular, and proper ventilation provided, the vinegar will "make itself," but from some unexplained cause, some casks of cider will be slow to undergo the change, or as vinegar makers say, are "lazy." The "graduator" is used for these lazy casks, the cider being passed through it, will get a start, and afterwards go on without trouble.

Composts.

A mass of green manure and refuse of the barnyard are piled in a heap, and shoveled over several times in order to mix the various substances; to pulverize the coarse lumps, and especially to check and prevent overheating. Green stable-manure contains little or no plant-food, that is to say, the elements of plant-food contained in it are not in a form at once available to plants, either chemically or mechanically. When put into a compost heap, however, the oxygen of the air permeates the mass, and, by aid of moisture, causes decomposition, which destroys the structure of the bits of straw and undigested fodder, and changes the coarse material into a fine mechanical condition, and also changes it chemically, so that its plant-food is readily available to crops. The same changes occur when green manure is applied to a light porous soil, in which air has free circulation; while in a heavy, compact soil, it decomposes but slowly.

There is considerable discussion at this time as to the economy of composting manures. Either side would see that the other was right, if both could look over the boundary fences of their farms, and note the different effect of manures in varying soils. The sandy-land farmer finds that green manure acts so quickly, that composting is too expensive for the scarcely perceptible increase in the activity of the manure; while with the clay-land farmer, green manure is so much slower of action than a well-rotted compost, that the labor expended on the latter, gives a handsome return in the luxuriance of the growing crops and more abundant harvest. The discussion is but the old story of the shield with two sides. There is, however,

Too Much Labor

expended on composts. The repeated turnings of the heap with fork and shovel, are for the purpose of mixing and pulverizing to prevent overheating. Now "heating" is only rapid oxidation, and to check it, we have but to control the admission of the oxygen of the air to the interior of the mass; this may be done by compacting the surface of the heap with the shovel or feet, and covering it with a thin layer of earth, also patted down firmly with the shovel. Then, there will be a slow decompo-

sition, with no "fire-fanging," which will change crude material into plant-food, and cause the coarse portions to rot and fall to pieces. The opening and turning of the heap effects the heating only for the moment, while it gives free access to the air, and results in even more rapid oxidation and "heating" than before. Aside from once or twice turning, to thoroughly mix the contents of a general heap—if only clear stable manure is used, no mixing is necessary—all labor spent in working over a compost heap is wasted. We have proved this by experience, and when the cost of labor in making compost, by the old method, is \$2, if not more, per cord, it is a fact worthy the attention of the readers of the *American Agriculturist*.

Hoisting Apparatus.

Several enquiries are made for a hoisting apparatus for barns, stables, and granaries. The one here

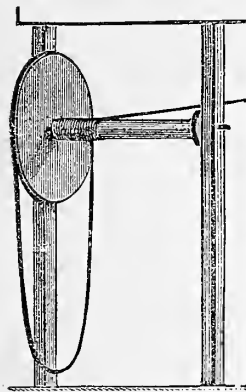


Fig. 1.—A "HOIST."

described may be easily made and readily affixed to the frame. Two posts, six or eight feet apart, are fitted to the timbers of the top floor and upper beams. A wheel is made of three thicknesses of one-inch boards bolted together; the outer ones extending $1\frac{1}{2}$ inch beyond the inside piece, thus forming a groove for the rope to run in. The edges of the groove are beveled off, so that the rope will

neither be pinched, nor rise, and be thrown off, but will work easily in it. An axle is framed into the wheel, and a flange fitted to its end, to keep the hoisting rope in place. At each end of the axle are wing gudgeons which work in boxes bolted to the posts, as shown at fig. 1. On the post are a pair of round blocks turning upon pins, to hold the wheel-rope when it is desired to suspend a weight upon the hoisting rope for any purpose. The rope being placed between the blocks, they pinch and hold it as they are drawn together. The pulley wheel should be 8 feet in diameter, and the axle 8 inches; this will give one man twelve times his natural

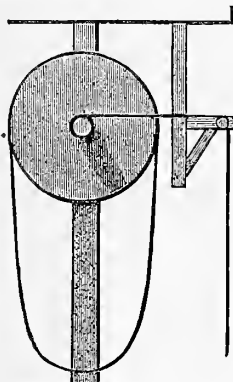


Fig. 2.—SIDE VIEW.

lifting power. Where more power is required, enlarge the wheel and decrease the axle, or either may be done with a proportionate gain. At fig. 2 is a side view of the hoist with the "eat-head" over the door outside, for the rope to pass over.

Physicians as Veterinarians.

A student in his last year at the medical school endorses the course of the *American Agriculturist*, in advocating the introduction of veterinary studies into medical schools, and of physicians treating dumb animals as well as men. He writes: "You speak of the 'false pride of the doctors.' That may be the case with some, but the difficulty often lies with public opinion. There are plenty of tender hearted physicians, who possess the requisite knowledge, and would take pleasure in giving relief publicly to suffering animals; but I know of cases where it is thought necessary to treat them on the sly, the owners promising secrecy. I am a medical student in my last College year, having a knowledge of comparative as well as general anatomy, and an understanding of the commoner diseases among domestic animals.

This summer I undertook the treatment of several horses and was quite successful. For this I was censured by half the old ladies, as well as a great many men. As a student in his last year I am allowed to practice, and have had many cases, and some admit having received benefit from my treatment. Yet the influence of their acquaintances was so great, that I was discharged by them because I dared to give relief to a suffering brute. In fact many would hurt me all they could, saying, 'He's only a horse doctor.' Is it any wonder that physicians fight shy of such criticism? I have not the least doubt, if the public would consider it honorable for a physician to relieve suffering anywhere that life exists, that the Medical Colleges would not be slow to take up more of the diseases of the brute and their treatment. It is my intention to, if possible, practice on man or beast, giving relief wherever pain is found, pay or no pay."

[There are "horse doctors" and horse doctors; or the line is now drawn between "horse doctors" and veterinarians. If a calling is not respected, it is because of the men who fill its ranks, and occupy its offices. We know of veterinarians who are as much respected as any physician in their town or city, and of those who practice upon all kinds of animals, both human and brute, without detriment to their standing. If physicians are thoroughly educated in, and fitted to practice, veterinary medicine, there is little danger that public opinion will be long against them. They have only to persevere in their course, and show their ability and respectability, in order to be respected, and to have all the work they can accomplish.—EDS.]

Success in Breeding.

BY CHAS. P. LYMAN, V. S.

Breeding from unsound stock, especially horses, is a serious, yet common mistake of farmers. No rule is better established, than hereditary transmission of qualities; and this does not mean that actual disease is communicated, but merely that such peculiarities of constitution, or form, are handed down from generation to generation, as renders the offspring extremely liable to the same diseases as their parents, whenever they are exposed to suitable exciting causes. No one would, of course, believe in the transmission of a deformity from an accident, as a broken limb, or a dislocated joint. But, in considering the purchase of a breeding mare, or the use of a certain stallion, be careful of what is admitted into the list of accidents; do not be imposed upon by the assertion that this spavin, ringbone, curb, heaves, or roaring, occurred from a wrench, strain, or fall, violent or sudden over-exertion, for which the animal is not to be blamed. Trust invariably to the mare, or stallion, that goes through her or his work, at all ages, sound, and turns up sound at the last. Such can speak for themselves, and need no apologies for this or that ailment. Some diseases are so trivial, that they need not to be taken into the account; but many others are so serious that they should never be overlooked. Broken wind, ringbone, navicular disease, curb, spavin, and serofulous diseases of the joints (found especially in cattle), periodic ophthalmia, cataracts, etc., are so important, and so decidedly hereditary, that they should always be considered, unless known circumstances tend to mitigate the general rule. Temper should always receive special attention: a fractious, fretful, dogged, or vicious disposition is so vexatious as to be a great drawback on both the value and usefulness of the animal. No consideration should induce any one to breed from an animal with a "soft" constitution; and there should always be plenty of substance and size to suit the purposes for which the progeny may be designed. Choose animals of a medium age to breed from, as they generally produce more vigorous, healthy, and thriving offspring than the very young or the very old, though there are some notable exceptions to this general rule. It is claimed by many, that there is no foundation for the prejudice, in some quarters, against in-and-in breeding. On the contrary, it has been plainly

established, that within certain limits, this plan is highly advantageous, when the stock is of the right sort. Some writers go so far as to say that there is no other way in which the perfections of any particular strain can be so certainly retained as by returning frequently to the original blood. When out-and-out crossing is strictly followed, the tenth generation contains only $\frac{1}{1024}$ th of the original stock; shown in tabular form as follows:

1st.	Off Cross	contains	$\frac{1}{2}$	original blood.
2d.	"	"	$\frac{1}{4}$	"
3d.	"	"	$\frac{1}{8}$	"
4th.	"	"	$\frac{1}{16}$	"
5th.	"	"	$\frac{1}{32}$	"
6th.	"	"	$\frac{1}{64}$	"
7th.	"	"	$\frac{1}{128}$	"
8th.	"	"	$\frac{1}{256}$	"
9th.	"	"	$\frac{1}{512}$	"
10th.	"	"	$\frac{1}{1024}$	"

The practical results, of course, will not always follow this arithmetic, because some certain horse may stamp his form so completely on his offspring, that it will not be easily gotten rid of; but still it will run out in the course of time, and the more complete and violent the cross, the sooner will the peculiarity disappear, and it can only be retained by frequent returns to the same blood. By bearing these few facts in mind, and acting upon them with judgment, the breeder can reap all the advantages of good stock, without running in-and-in so constantly as to hazard the deterioration of his animals; on the other hand, if there is any special defect, he will be able to breed it out. In short, this just amounts to the fact that "like begets like"—shown plainly when looked at in a more marked degree—as, who would expect a Short-horn calf by an Alderney bull from an Alderney cow? and this is no more absurd than to expect a first-class foal from inferior parents. Again, the fault of looking to pedigree alone, has caused much disaster amongst breeders; good blood is a good thing, but it is not soundness and perfection of form, and does not supply their place. Never breed from an unsound, or ungainly animal, thinking that *perhaps* he will "throw back" to his sire, grand-dam, half sister, or some other renowned relative of the past. By all means keep to the good blood, but select its best specimens, for this alone will give success, or history falsifies herself.

A Cure for Choking or Bloat in Cattle.

When cattle are bloated in consequence of the accumulation of gas in the stomach, from eating greedily of wet grass or clover, or they get choked by the lodgement in the gullet of an apple, a small turnip, or other obstate, some mode of immediate relief should be applied. An effective means is to insert a round billet of wood between the jaws, fastening it by cords to the horns or around the



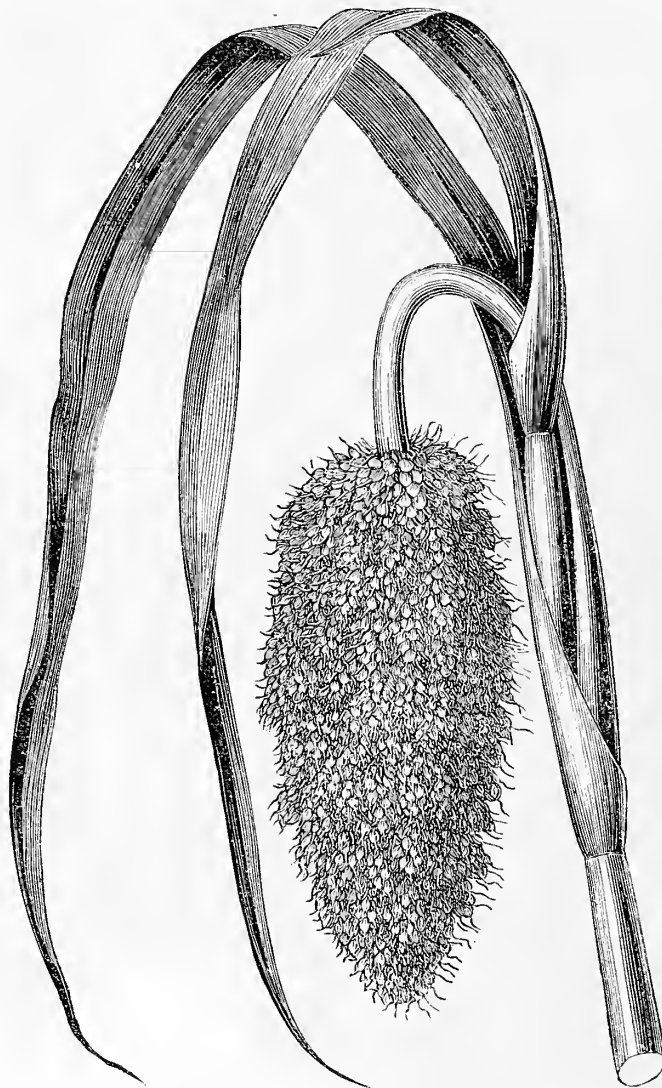
GAG TO CURE BLOAT OR CHOKING.

head. The billet should be large enough to force the mouth wide open, and cause efforts on the part of the cow to rid herself of the innumerable. In these efforts, during which the cow will raise her head, much of the gas will be discharged, or the obstacle in the throat will pass downwards. Vigorous and continued pressing of the abdomen with the hands will assist in the expulsion of the gas.

"Pampas Rice."—Drooping Sorghum.

Seeds of a grain under the name of "*Pampas Rice*" have been offered for the last two years in such papers as would admit the advertisement. Small towns in Tennessee were headquarters for Durra Corn (*Sorghum vulgare*), offered as "Ivory Wheat," and by other tempting names, while "Pampas Rice" had a town in Michigan for its "head center," where this remarkable grain rested on its way from the Pampas of South America to take a fresh start among the farmers of North America. Judging from the description and very poor engraving accompanying the announcement of "Pampas Rice," we supposed it might be a variety of *Sorghum vulgare* or "Durra Corn," and in an article on that grain in February, 1877, we stated that such was our opinion, though we had not seen the plant, or a flower-cluster—nothing but the grain. Mr. J. F. Hilgard, of Mount Holly, N. J., tested this "Pampas Rice" on the soil of New Jersey, and supplied us with abundant specimens in all stages of development. An examination shows this "Rice" to be the "Drooping Sorghum," *Sorghum cernuum*, which differs from the common Sorghum, *S. vulgare*, in two not very important respects: the top of the stalk, as the flower-cluster develops, bends over in a regular curve, in such a manner as to invert the cluster and make its top point directly downwards, as shown in the engraving. This curving is not due to the weight of the head, or cluster, as it occurs long before the grain begins to fill—even while the plant is in flower. The other difference from the Common Sorghum, is in the length of the stalk to the male flower. Neither of these points is of sufficient importance to make a species upon, and we have little doubt that they are forms of the same. Indeed, Trinius, some 50 years ago, though he described these and the Sugar Sorghum as distinct species (Trinius, "*Andropogoneorum Genera et Species*"), says that they appear to be all forms of one. The stalk in "Drooping Sorghum" grows about seven feet high, and as it has abundant foliage of a grayish green color, a field of it presents a striking appearance. With the exception of its inverted position, the cluster in flower, and when ripe, is like that of Durra, and the grain appears to be identical. With the other Sorghums, this appears to be known only in the cultivated state; as they all contribute largely to the support of the native population of the East Indies and Africa, they probably originated in one or the other of those countries. As stated on a former occasion, we have no objection to the cultivation of this grain or the sale of its seeds, but we most earnestly protest against selling it under a false name, indeed doubly false, as the plant is not, as has been asserted, a native of the plains of South America, nor is it a "Rice," or anything like a rice, and to sell it as such is to obtain money under false pretences. The correspondent to whom we are indebted for the specimens asks, "What is 'Guinea Corn'?" I have wondered whether this could be the same under another name. * * * That was introduced here 60 or 70 years ago."—According to Darlington, the "Guinea Corn" was precisely this "Drooping Sorghum," and not the erect kind. As to whether there is any place in our agriculture for any Sorghum as a grain crop, we much doubt. The clusters, with their great numbers of small grains, have the appearance of being very productive, but we doubt if a given area of this would yield as great a weight of grain as the same in Indian Corn. There is little probability that the grain of Sorghum will ever come into use with us as an article of food, save as a rarity or curiosity. Like rice, it can be prepared for eating without grinding—hence is suited to semi-civilized or barbarous nations. The whole grain is hoiled or roasted, and by some tribes

eaten raw. We are unable to find an analysis of the grain, but feel sure, from its appearance, that it contains a much smaller amount of nutritive principles than wheat or others of our food grain. Indeed the fact that it has not obtained a foothold either in Europe or in this country, though frequently introduced, shows the popular estimate of its value. It was tried in Europe as early as 1596, and has since been introduced on several occasions, as it has been in this country. The late attempts to popularize these grains under such false names as "Pampas Rice" and "Ivory Wheat," are not likely to succeed now any better than they did as "Guinea Corn" and "Indian Millet" with our grandfathers. However valuable they may be to the native negro tribes of Africa, these grains will scarcely be sought after as food in a country where wheat and Indian Corn are so abundant as with us.



DROOPING SORGHUM.—(*Sorghum cernuum*).—"PAMPAS RICE."

What may be said in their favor as forage crops, will be found in our article in February, 1877.

Renovate the Fowl Houses.—I. K. Felch writes: This month should not pass, without the fowl houses being thoroughly white-washed, and the nests made clean and free from lice. The floor should be covered with three or four inches of gravelly loam, that the sun may dry it before cold weather sets in. If the windows are not so arranged that the sunlight may fall directly on the floor, have them changed so that it will; for this sunlight and dry earth will enable you to winter fifty per cent more fowls in the same quarters—by reason of their agency in deodorizing the droppings—than can be kept on a bare floor, or upon the ground, for, in the latter case, the earth will become damp and filthy. Have the flock in winter quarters before the hunter's moon, and begin the feed of meat as soon as frosts cut off the insect supply, also providing green food, as chopped roots, etc.

An Experiment with Pearl Millet.

BY PETER HENDERSON.

Pearl Millet has been cultivated for some years as a forage plant in some of the Southern States, as "African Cane," "Egyptian Millet," "Japan Millet," and in some places as "Horse Millet," but little was known of it at the North before last year, and then only in such small quantities as to hardly allow of a fair trial. From what we saw of it in 1877, we determined to give it a thorough trial this season. A piece of good strong loamy ground was prepared as if for a beet or turnip crop, by manuring with stable-manure at the rate of 10 tons to the acre, plowing 10 inches deep, and thoroughly harrowing. The Millet was then sown in drills 18 inches apart, at the rate of 8 quarts to the acre. We sowed on the 15th of May, about the date that we plant corn; in 12 days the plants were up so that a cultivator could be run between the rows, after which no further culture was necessary, for the growth became so rapid and luxuriant as to crowd down every weed that attempted to get a foothold. The first cutting was made July 1st—45 days after sowing; it was then 7 feet high, covering the whole ground, and the crop, cut 3 inches above the ground, weighed, green, at the rate of 30 tons per acre; this, when dried, gave 6½ tons per acre as hay. After cutting, a second growth started, and was cut August 15th—45 days from time of the first cutting—its height was 9 feet; it weighed this time at the rate of 55 tons to the acre, green, and 8 tons dried. The third crop started as rapidly as the second, but the cool September nights lessened its tropical luxuriance, so that this crop, which was cut on October 1st, only weighed 10 tons green, and 1½ tons dried. The growth was simply enormous, thus: 1st crop in 45 days, gave 30 tons green, or 6½ tons dry. 2d crop in 45 days, gave 55 tons green, or 8 tons dry. 3d crop in 45 days, gave 10 tons green, or 1½ tons dry. The aggregate weight being 95 tons of green fodder in 135 days from date of sowing, and 16 tons when dried to hay. This exceeds the clover meadows of Mid-Lothian, which, when irrigated by the sewerage from the City of Edinburgh, and cut every four weeks, gave an aggregate of 75 tons of green clover per acre. There is little doubt that Pearl Millet is equally as nutritious as corn-fodder, which it resembles even more than it does any of the other Millets. We found that all our horses and cattle ate it greedily, whether green or dry. If sowing in drills is not practicable, it may be sown broadcast, using double the quantity of seed—say 16 quarts per acre. The ground should be smoothed by the harrow, and again lightly harrowed after sowing; if rolled after harrowing, all the

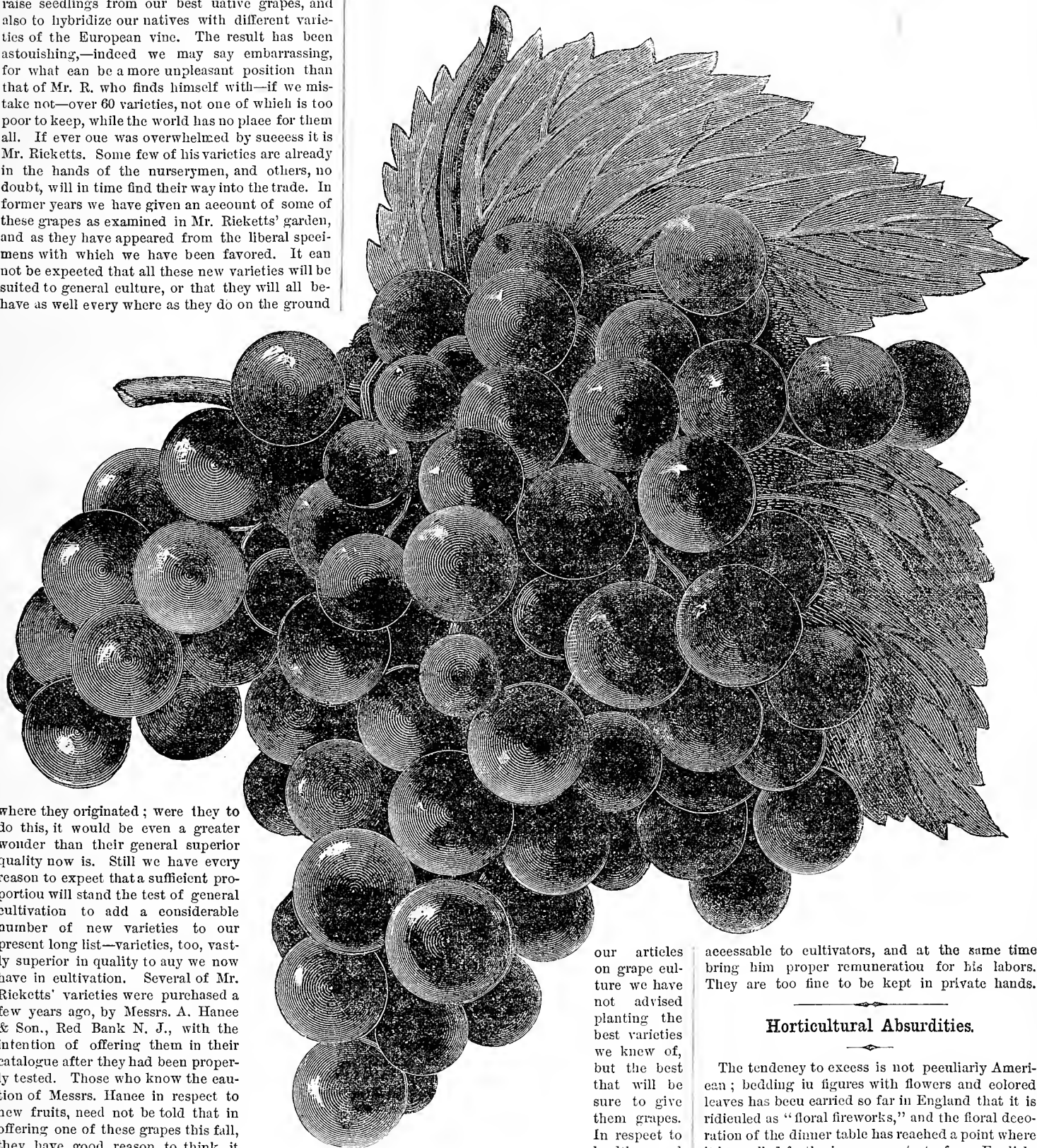
better. I know of no farm crop that will better repay high manuring, but so great is its luxuriance that it will produce a better crop without manure than any other plant I know of. In those parts of the Southern States where hay can not be raised, this is a substitute of the easiest culture, and being of tropical origin, it will luxuriate in their long hot summers; even though our Northern seasons may be too short to mature the seeds, our experiments in New Jersey this summer show what abundant crops may be expected if the similar conditions are secured. Pearl Millet as a fodder-plant presents a new feature in our agriculture, and I feel sure that within ten years we shall wonder how we ever got on without it.—[This plant, *Penicillaria spicata*, was figured in the *American Agriculturist* for January last, where an account of its history will be found. We know that considerable quantities of the seed were disposed of, and we shall be glad of reports from those who have tried it, especially unfavorable ones; these, if the probable causes of failure are given, are always instructive.—Eds.]

A New Hardy Grape—The "Highland."

The history of American grape culture presents nothing so remarkable as the success of Mr. J. H. Ricketts, of Newburg, N. Y., in producing new seedlings. Mr. R. began a number of years ago to raise seedlings from our best native grapes, and also to hybridize our natives with different varieties of the European vine. The result has been astonishing,—indeed we may say embarrassing, for what can be a more unpleasant position than that of Mr. R. who finds himself with—if we mistake not—over 60 varieties, not one of which is too poor to keep, while the world has no place for them all. If ever one was overwhelmed by success it is Mr. Ricketts. Some few of his varieties are already in the hands of the nurserymen, and others, no doubt, will in time find their way into the trade. In former years we have given an account of some of these grapes as examined in Mr. Ricketts' garden, and as they have appeared from the liberal specimens with which we have been favored. It can not be expected that all these new varieties will be suited to general culture, or that they will all behave as well every where as they do on the ground

thing remarkable, and Messrs. H. assert its perfect hardiness in their grounds. Good foliage and free growth we must have in any grape destined to be popular, whatever its fruit may be. We wish grape growing to be more universal than it even now is; people in general will not eodde and care for a vine that is not perfectly hardy and healthy. In all

pulp; the flavor rich and delicious; the skin is without aerid taste, and, while thin, is apparently sufficiently firm to allow of transportation. We shall look with interest upon the future of this grape, and hope it may equal its present promise. We hope that some plan may be devised, by which the choicest of Mr. Ricketts' grapes may be made



A NEW GRAPE—THE "HIGHLAND."

where they originated; were they to do this, it would be even a greater wonder than their general superior quality now is. Still we have every reason to expect that a sufficient proportion will stand the test of general cultivation to add a considerable number of new varieties to our present long list—varieties, too, vastly superior in quality to any we now have in cultivation. Several of Mr. Ricketts' varieties were purchased a few years ago, by Messrs. A. Hance & Son., Red Bank N. J., with the intention of offering them in their catalogue after they had been properly tested. Those who know the caution of Messrs. Hance in respect to new fruits, need not be told that in offering one of these grapes this fall, they have good reason to think it suited to general culture. The only one of the half dozen or more varieties purchased of Mr. Ricketts that they yet offer, is the "Highland." This is a hybrid between the "Concord" and "Jura Museat," and was formerly known in Mr. R.'s collection as No. 12 B., under which number it has in former years been exhibited and commented upon. In foliage and growth of vine it resembles the Concord; one well known grape-grower, in whose hands the Messrs. Hance had placed the "Highland" for trial, recently informed us that its vigor of vine was some-

fied with the testimony as to the "Highland." The bunch and berry are shown of full size in the engraving, which is from a drawing after exact measurement by Mr. T. P. Pope, of Newburgh, an artist well known for his accurate and life-like paintings of fruit. The heavy shouldered bunch is characteristic of the "Highland," and the evenness in the size of the berries is also an excellent feature. The color is black, with a bluish shade, and there is an abundant but delicate bloom; there is no hard

our articles on grape culture we have not advised planting the best varieties we knew of, but the best that will be sure to give them grapes. In respect to health and hardiness, we are well satis-

accessible to cultivators, and at the same time bring him proper remuneration for his labors. They are too fine to be kept in private hands.

Horticultural Absurdities.

The tendency to excess is not peculiarly American; bedding in figures with flowers and colored leaves has been carried so far in England that it is ridiculed as "floral fireworks," and the floral decoration of the dinner table has reached a point where it has called forth vigorous protests from Englishmen who insist that, however it may be with roast-beef and plum-pudding, roast-beef and posies "don't go together." But we need not go to England for examples of horticultural excess—our American tendency to what is expressed in the slang of the day as "running things into the ground," manifests itself in our gardening as well as in other matters. Last year we mentioned Forest Hill Cemetery, near (if not now in) Boston, as affording examples of very neat bedding designs; a visit to the grounds this year shows some of quite an opposite character. The amount of bedding there is

something bewildering, and some of it in excellent taste, but there are some things there that should never be repeated, for they "make the judicious grieve." There is one absurdity, we do not know what it is intended to represent; it is something with a handle, it may be a basket; the handle—a hollow wire frame, probably—is planted with succulents, and on each side are two short pillars, which, if not harrels or casks covered with plants, might as well be, as they look like representations of those articles. It was unpleasant to see this and some other monstrosities in a place where they know how to do better things. The so-called "Floral designs" at exhibitions are as often something to avoid, as they are things to be commended. We have very little sympathy with the fashion that works flowers into broken pillars, anchors, and the like, but as this gratifies many, and affords employment to many others, we do not object, so long as it is kept within bounds. At the last exhibition of the N. Y. Horticultural Society, there were liberal and extra premiums offered for works of this kind, and it brought out some strange designs. There was a pair of shoes on a cushion; the shoes were of white flowers without, and of scarlet flowers within, which looked distressingly like a red flannel lining. But why make shoes out of flowers? Why degrade these delicate creations by working them into the semblance of something that is to be trodden under foot? There were various clocks and mantle pieces, and strange affairs, unlike anything else. There was a camp-fire, with a tripod, and something hanging that might have been a tea-pot, or may have been a tailor's goose. A greater absurdity was a fire-place, with an attempt to represent coals and flames in scarlet flowers. It becomes a question whether a Society is properly educating the public taste by exhibiting such things. Of course they attracted attention, and were admired by certain people; but the persons who are pleased by such absurdities are those who would admire the old topiary work, where bears, and boars, and other horrors were clipped out of box trees. It was a relief to turn from the numerous horticultural absurdities to one or two simple, but exquisitely neat bouquets—not those with a silver fringe, but sufficiently beautiful without—and the most appropriate of all the funeral designs, a plain, heavy wreath of ivy leaves, with a few heads of ripened grain.

An Enemy to Sweet Corn.

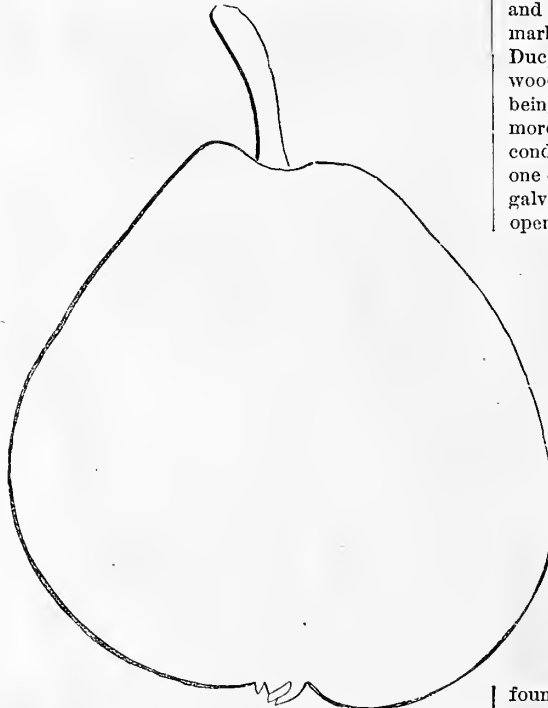
Several specimens of sweet corn have been brought us, and others were shown at the late Exhibition of the N. Y. Horticultural Society, with the kernels largely destroyed. At first sight, we supposed it to be the work of the Boll-worm, or Corn-silk worm, which is often found in corn; that, however, enters when small by the way of the silk, and eats as it goes, but in these specimens the attack was made from without, and we were assured that it was the work of a "bug." At last the culprit was caught in the act and brought, when we recognized it as a well known flower-eating beetle, the Indian Cetonia, (*Cetonia Inda*, or *Euryomia Inda* of some). It is of the size shown in the engraving, mostly of a light yellowish brown, with irregular black spots, and has a changeable metallic lustre; it is very hairy, especially below.



This beetle has two broods, one appearing in the spring and the other in September; they usually feed upon flowers, especially those secreting honey, and have been especially known for their depredations upon peaches, in which they sometimes make sad havoc. Authors mention their feeding upon the sweet sap of corn stalks, but do not notice their attacks upon the ear. In some localities, the injury to sweet corn has been considerable this season, but we have not heard of it among field corn. The full history of the beetle does not seem to be well known, but it is supposed that its larva lives in the ground upon roots. Its fondness for sweets, and the fact that the second brood is the only one thus far known to do mischief, suggest that they may be diminished by trapping the first brood by means of some sweet bait, and destroying them.

A First Class Pear, The Ansault.

About the middle of September we received from Messrs. Ellwanger & Barry, of Rochester, specimens of the "*Bonne de Puits d'Ansault*," a pear which, though they have had it on trial for several years, is so little known, that it may be regarded as new. Eight years ago, Mr. Barry, in writing of the newer pears, said of this, "will rank as best, and is really the best in this list." The specimens fully sustain this claim to "rank as best"—indeed we are ready to say that, if not the best pear we ever tasted, it is as good as any. In their recent catalogue, Messrs. E. & B. say "fully equal to the best Seckel," beyond which praise cannot go. This variety was named and sent out by Andre Leroy



THE "ANSAULT" PEAR.

(Angers, France), in 1865; it first fruited with him in 1863, and at Rochester in 1870. Mr. Barry described the tree as a fair grower, with small leaves, bearing young and very productive. The accompanying outline, gives the shape of a specimen of the average size. It is thus described. "Size medium to large; Form roundish obovate; Stem an inch long; Calyx small, deep; Skin a light golden russet, like the 'Golden Beurré of Bilboa'; Flesh melting, fine grained, sweet, juicy, vinous; Quality, best; Season, middle to end of September." This pear bears the name of the locality where the parent tree grew, a name quite as forbidding as *Beurré Gris d'Hiver Nouveau*. It does not seem right that a fruit of such superlative excellence, should start on its career, weighted with such a name, for the reasons that Americans have not time to use such names, and not one in a thousand could pronounce this correctly if he tried.

Freely translated the name means, "The good (pear) of the well of Ansault." We are as great sticklers for accuracy in nomenclature as any, holding it little less than a crime to change the name of a fruit, if it has one. In the present case, we propose to do at the outset, what every one who raises, and every one who buys the fruit will do, if the pear attains the popularity we predict for it, *i. e.*, shorten the name. Popular usage settles that the Duchesse d'Angouleme, shall be Duchess, and

the King of Tompkins County, shall be King among apples, and no earthly power will make people say *Bonne de Puits d'Ansault*, when *Ansault* will answer. We do not propose to change the name, but simply to leave four fifths of it "understood." Even with *Ansault* we foresee trouble; at a fruit-stand just below our office, there was last winter, a sign of "Dan Joe pears," for *Beurré d'Anjou*. When the present excellent variety finds its way into the hands of the street vender, we may expect to see, "Ann Salt Pears" placarded at the stands.

The Refrigerating Fruit-Box.

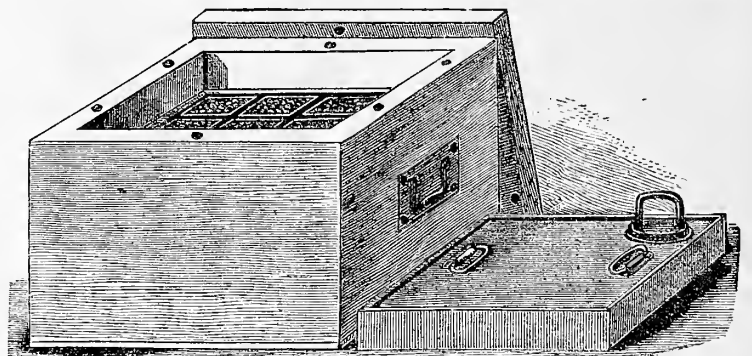
BY PETER HENDERSON.

A light, portable refrigerator for shipping fruit and vegetables by southern growers to northern markets, has recently been invented by Mr. H. A. Duc, of S. Carolina. It consists of a box of light wood, lined within with galvanized iron, a space being left between the box and lining of an inch or more, which is filled with charcoal or other non-conducting material. The box is provided with one or more shallow movable ice-boxes, made of galvanized iron, provided with handles, and an opening which is closed by a screw-cap. The

boxes are filled with broken ice, and closed so securely that no water from the melted ice can escape and injure the fruit. These ice-boxes are of the same height as the fruit baskets or cups, and may be substituted for a tier of these, allowing one or more to be used according to the requirements of the season, one, at the top, being sufficient in moderately warm weather, and as the season grows hotter, one of the lower tiers of fruit may be replaced by a box. Fruit received in New York from southern points, can by means of these refrigerators be safely re-shipped to Boston or elsewhere; the boxes being replenished with ice, it is ready for another journey. Before giving an opinion of this invention, we visited several of the principal commission dealers in New York, and

found that the representations of the patentee were fully confirmed by those who had tested it; two firms, dealing largely in strawberries, stating that fruit received in this refrigerator brought, on the average, 10 cents more a quart than that shipped in the ordinary manner. An instance was cited of a shipment made from Charleston so late as May 10th, in which the strawberries received in Mr. Duc's refrigerator averaged 23c. per quart, while those carried in the steamer's ice-boxes brought but 12c., the difference being due solely to the superior condition of the former lot.

The cases are made square, or longer than wide; the one shown in the engraving is 23 inches square



H. A. DUC'S REFRIGERATING FRUIT-BOX.

by 19 inches high, and provided with strong handles which shut down flush with the sides; the cover, shown at the rear, is double, and filled in the same manner as the sides; this is fastened down by large screws with square heads, which are countersunk. The ice-boxes, one of which is seen at the right hand, are 4 inches high, of a size to fit the interior of the case; the opening to admit the ice is about 3 inches across; the cap is screwed tight by means of an iron rod, bent as seen in the

engraving; its ends fit into two holes in the cap; when not in use, this handle is removed and laid upon the ice-box. A case holding 72 quarts, when filled and ready for shipment, weighs about 250 lbs. Though Mr. Duc has taken out a patent for the invention, he liberally allows us to say that he will permit any fruit grower to make the box for his own use, without exacting a royalty for his patent.

What Is a Sweet Potato?

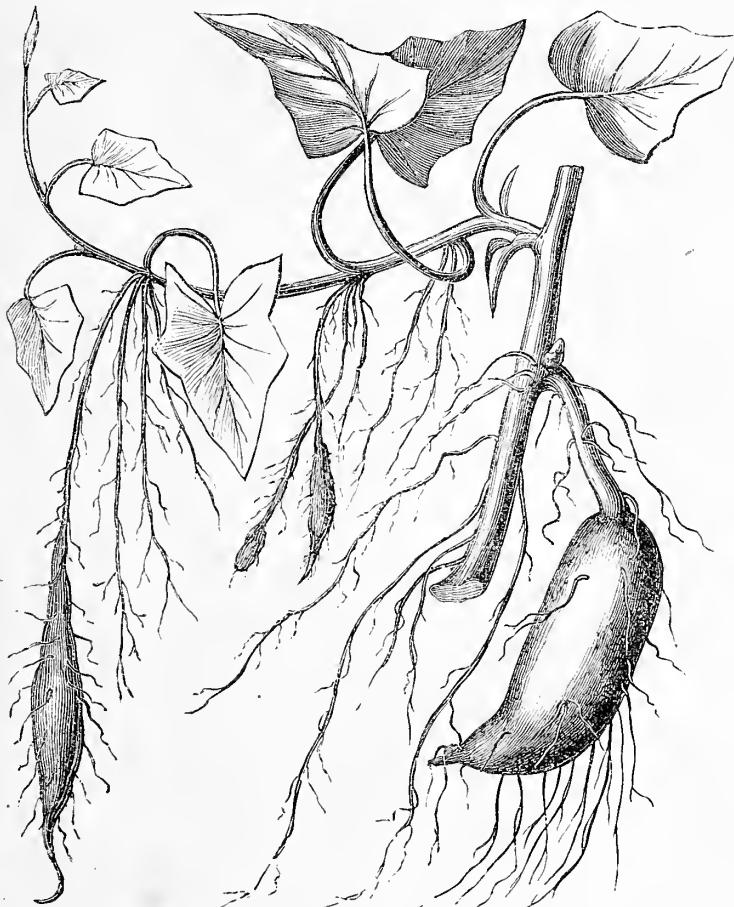
BY PROF. ASA GRAY.

We speak of *Potatoes* and *Sweet Potatoes*, as if our common Potato was the real thing and the saccharine subject of this article had got its name from its similarity to the other. The fact is just the other way. *Batatas*, whence the English word *Potatoes*, is a South American native name for the Sweet Potato, which was known to Europeans, and under this name, before anything was known of our tuber. The latter and later known was taken for a sort of *Batatas*; and, being the only one which could be raised as a crop in Northern Europe, it usurped the name of Potato among English-speaking people generally; but here only at the North. At the South, the Potato is a Sweet Potato, and its Peruvian namesake is an Irish or White Potato. This cold-country Potato we all understand to be a *tuber*; and a tuber is a sort of underground stem, or mostly the thickened tip of an underground stem. A slender subterranean shoot thickens at the farther end or tip, for a space that includes several joints with their side buds, or eyes, and this is the Potato.

Now, what is a Sweet Potato? Is it a tuber like its namesake, or is it a root? That the old hotanists called it a root, settles nothing; for they did not distinguish any better than people in general do now. I had always regarded it as a true root. It is described or mentioned as such by French and German hotanists generally; but in some English botanical text books it ranks as a tuber. On the other side of the Atlantic they are not so familiar with Sweet Potatoes as we are. But even here I find that some of our hotanists are puzzled by them.

It is easy to see why. Sweet Potatoes are propagated from shoots which freely spring from the parent potato, and from the sides of it, not from the very top as in a beet and turnip. In these the thick root is formed by direct growth from the seed; and the very top is stem, and so bears a bud, or buds. The Sweet Potato—which we never raise from seed—springs from the lower part of the slip we planted, and from the under side of the branches which trail and creep along the ground. If these Potatoes spring from stems, as common Potatoes do, why are they not of the nature of stem, as common Potatoes are? We planted a little experimental Sweet Potato patch, to settle that question, and dug into it from time to time, to see what was going on. It turns out as I expected. In the underground growth of common Potato plants there are two clearly different things produced, namely: 1. Slender roots, which branch freely and taper at the end into fibres. 2. Slender branches of evidently different appearance as to their surface, ending in the Potato, on which the regular little scales that answer to leaves are visible almost from the first, and the eyes or buds just above them soon appear. In the Sweet Potato plant, all the young growth is of one sort, all are clearly roots; and after a while some of these roots thicken up more or less, and at length the stronger ones become Potatoes. As the summer advances, rootlets strike from the lower side of the creeping stems, at or near the joints, in considerable numbers; these penetrate the soil, and some of these, pre-

cisely like the others, thicken into Potatoes. [The engraving shows a part of the original "set," or cutting, and one of the numerous creeping stems, at the joints of which roots have formed; some of these are beginning to thicken at the end to form potatoes. To save space, the roots are somewhat shorter in proportion than they naturally are.—EDS.] There are all stages here—from slender roots to slender Potatoes. Nothing can be clearer than that these Sweet Potatoes are really roots. That they will produce buds is no argument to the contrary. Hundreds of species of plants may be propagated by root-cuttings. These buds appear near the upper end of some of my Sweet Potatoes, while they are still young or small; and in some they are starting into shoots.



THE SWEET POTATO.

But none of them start from the axils of little scales, and they are without order. They are like the buds on the roots of Osage Orange, Blackberry, etc., by which these plants are freely propagated by root-cuttings. It is clear to me that a Sweet Potato is a true root, but one that has a happy proclivity to produce adventitious buds, which immemorial propagation in this way has confirmed.

Ivy—Begin Now.—When we see a window furnished with the most beautiful of all screens, a living one of Ivy, or a room in which the vine is made to run upon cornices or surround the picture frames, if we do not envy the possessor, we feel a strong wish that we had something like it. Recollect that all this luxuriance had a beginning; this vine, the total length of which measures yards, was once but a few inches long. A small cutting, a little care, and time. These were all the outlay required for this treasure of verdure—and all these are within the reach of every one. Time, indeed, is the chief element, but after a fair start has been made, less is required than one would suppose. Make a beginning; if with a rooted plant, all the better; if only a cutting or "slip" can be had, start with that, for it will take root with the greatest ease. When growing, give it a fairly rich soil; water as needed, and—especially this—remove the dust from the leaves as often as it accumulates, by the use of a sponge and warm water, and in time the reward will come,

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

Home Topics.

BY FAITH ROCHESTER.

Does it Pay to Make Rag Carpets?

To make or not to make a rag carpet—that is the question. I have rags enough to carpet another room, and I need another every-day carpet. When I see the bags and boxes where the old cleansed garments and pieces fit for a rag carpet are packed away, the impulse seizes me to go to work and get them converted into a plain serviceable carpet.

It seems for a moment that this course must be true economy. But is it? I have made one carpet within a year. There it is again—"I made it." Mother cut and sewed nine-tenths of the rags, and I let her do it—for which I hope to be forgiven. For when it came to weaving, the warp and weaving cost me thirty cents a yard, and I had an opportunity a few months before to buy an entirely new rag carpet quite as good as mine for fifty cents a yard, and other strong cheap carpeting can be bought for the same price. That leaves twenty cents a yard for cutting and sewing the rags, to say nothing of the rags themselves, which are worth something for paper rags, and a few for dealing with the "second-hand man." Twenty cents a yard for cutting and sewing the rags! And it takes from a pound to a pound and a half of the rags to make a yard of carpeting, and it would be a hard day's work to sew two pounds of rags so short as mine averaged, made largely of children's clothing and other old garments. It did not pay my mother and me, and when we handed the rags over to the weaver we felt that we had been doing a foolish thing. With a sigh of relief, mother turned from the rags to the regular sewing, which she had been wishing to help about, and as she mended and repaired, and made button-holes, and did the necessary hand-sewing on garments mostly made by machine, I felt how much more than twenty or thirty cents a day was her help, and what a hateful

thing my rag carpet would always be to me. Like many another mother with children grown up and full of the cares of children and housekeeping, mother wishes to help her children when she visits them, but she shall never sew carpet rags again.

But now I have hired help. As some excuse for getting her—for I was afraid that what I knew to be exhaustion might look like laziness to others—I said, "and while she stays we will make the rest of my rags into another carpet." But there is plenty else to occupy our time, in the way of sewing as well as housework. And I want my girl to have some time for her own, every day—not only time to make her own clothes, but time for some evening game. No, her time is too precious for carpet rags. Well, here are the children. Two little girls old enough to handle a needle, and a boy who could (with some difficulty!) be dragooned into the business. They all have a few regular chores each day—enough to make them feel that they are helping to bear the family burdens, and I honestly think that these are enough at present, with the lessons they have at school and at home. For I believe heartily in *play*, both out-doors and in, and I want to leave room for it and to encourage it as a legitimate thing. The thirty cents a yard which I should pay for warp and weaving (I might possibly get it for less now), would buy me a good carpet of straw matting, and if I should count in the time spent in cutting and sewing, and the value of the rags, I could get a more expensive carpet

for the rag carpet proposed. Suppose I get the matting, sell the cotton rags to the tin peddler, and make a few good plain rugs (pieced and braided ones, for I have no time for the pulled or drawn rugs), to lay over it in places where most warmth is needed in winter, or where most wear will come. Would not that be the best economy? I think it would, if we take into account the happiness and health and mental growth of the whole family—and if I had time I could show you how they are all involved in the question as to how we shall spend our time and money. Still I am not prepared to vote absolutely against all rag carpets. A good carpet of this kind will do a great deal of service—much more than almost any cheap carpet of the same money cost. The most reasonable method seems to be, to cut up the old garments and sew and wind them in balls as soon as they are unfit for other service, disposing at once of the refuse as paper rags. A housekeeper who has leisure, as childless housekeepers often have, or one who has children able and willing to help, can do this. Only good rags will probably be used, and some day there will be a carpet all ready to weave. Some housekeepers really do have time to make rag carpets, and to read good books, and to take walks with their children, and to keep up a correspondence with their absent friends, and social visits with their neighbors. Each housekeeper and mother must judge how she can best spend her time.

Banged Hair.

I am glad that this horrible fashion has such a horrible name. It is a fashion that disgraces our sex. Its prevalence shows that a great proportion of womankind are willing to submit to almost any indignity—even to having "idiot" written plainly on their faces—if it is only "the fashion." I have pitied little children so disfigured, and when I have met grown-up women and girls seriously appearing with banged hair in public places, in apparent ignorance of their disgrace, I have felt that I ought to, as Whittier says in "Ichabod,"—

"Walk backward with averted face
And hide the shame."

It seemed unkind to look such deluded "females" full in the face, for fear they might think you noticed their deformity or idiotic appearance. I don't know whether the word "banged" applies to the short frizzes worn over the forehead, but I have supposed that it only meant the short hair hanging straight down over the forehead like a fringe, not at all in an "artless" manner, but in a style so defiant of all artistic sense, as to stamp its inventor as absolutely ignorant in respect to beauty's laws. Woman's dress is a standing joke in the newspapers and among plain-thinking men. They always have some hold by which they can show us up to ridicule. But men are now crying out in agony over the "banged" hair, begging to know *why* women will do so. What possible reason can they have for making their faces hideous to behold?—There is no reason, except that it is "the fashion." I think I have heard, however, that all the frizzing and crimping of the last dozen years has so broken and ruined the forelocks of most young women that they resort to cutting them short in order to strengthen the roots and make these locks grow smooth and fair again. But didn't they know all the time, that frizzing and crimping would break and ruin the hair? Why can't they fasten back this fringe, or shingle the whole head, not too short, and give themselves a respite from all the tediousness of puffs and crimps, and rats and twists, and hair-pins and backcombs, and every other device invented to torture woman's hair?

No, "Simon says 'thumbs up,'" and all the thumbs go up. "Simon says 'wig-wag,'" and all the thumbs wig-wag. "It is the fashion," and we "must" do thus and so. "It is not the fashion," and we must not venture to follow our sense of decency and good taste. That ends it, of course, for the class of women who wear their hair "banged." But my heart relents. There are smart amiable girls, and intelligent young women in the ranks of the "banged." Doubtless they have reasons that I know not of for their tasteless method of dressing the hair.

Making Comforters, or Comfortables.

A comforter for a wide bed should have three and a half breadths, calico width, for the covering of each side, or for the whole, seven breadths, each two and three-eighths yards in length. In purchasing calico, allow sixteen and five-eighths yards. Many fill their comforters with from six to even eight pounds of cotton, but I do not like to put in over five pounds, and it is convenient to have a few light ones with only three pounds of cotton.

Lay the lining of the comforter upon the floor, and spread the cotton evenly upon it, leaving it a little thinner at the edges and corners if you choose, where the comforter will tuck in at the sides and foot of the bed. Open the rolls of cotton carefully, and unfold them as much as possible, making an even thin layer all over at first, and covering this with three, four, or five other layers. All this pulling apart and laying lightly together makes a lighter, softer, and warmer comforter than if the cotton is put in only partly unfolded. Place on the upper covering evenly, and tack all together around the edges. Lift it carefully, rolling it up if necessary, and lay it over a lounge or bed, or large table, beside which you can sit to tie it. Tie at intervals of six or seven inches, tying in tufts of worsted, or sewing through with light-colored yarn, and simply tying this with rather short ends. Turn in the edges of the upper and lower covers, and run them together when the tying is done. This is better than to bind it, as it can be more easily taken apart for cleansing. This method of tying comforters without putting them in frames is a great improvement on the old plan, I think; for the putting it upon the quilting-frame, and rolling and taking it off, was always the worst part of the job.

Mixing Bread without Salt.

Most bread-makers put salt in with the flour, yeast, water, or milk, with which they mix their bread sponge. I see no advantage in it, and I am very sure that the bread is less *sweet* (and to my own taste less delicious) on account of the salt. I have known several persons, who at first thought otherwise, to be convinced of this by experiment.

Christmas Decorations.

It may be thought early to call attention to the subject of Christmas decorations. If we had in mind only home decorations, perhaps it would be; but for Churches and Sabbath Schools it is none too soon. The days of those of our forefathers, who in their protest against formalism of all kinds, neglected all observance of church festivals and holidays, have passed. Their descendants will not be debarred a participation in the festivities of Christmas, and there is scarcely a denomination that does not observe the day in some manner, while the ancient custom of decorating churches, is becoming more general yearly. So many are interested in the matter of Christmas decoration for both the home and the church, that we are sure that a few hints on the subject will be generally welcome. The matter properly comes in the household department, for with the few exceptions of wealthy societies, where the matter is left to the sexton to employ professional decorators, it may be accepted as a rule, that if the church is to be decorated, it will be done by the women of the congregation. We will go still further, and say, that while the women may decorate the church, it will be practically done by one woman, who will be prime mover, head designer, the one who will look after everything; and though she may have help, will be looked to for everything. That one, too, is likely to be the one who reads this article, for it is just such women as *our* sisterhood of housekeepers that are found in the lead in such matters. It is astonishing how one leader will inspire others in work like this; a company of other women will be ready to help, if they are only told what to do; the young women will make it the occasion of a frolic, and will make fun of the work; and the young women being there, the young men—but we are getting away from our subject. Leaving to another time some hints on home decoration, let us consider that of the church, as it will take some

time to bring matters about. In the first place, there must be the decision to decorate at all. There will probably be one of two objections made; it will either be said that the church is too nice and new, and that decorating will injure or disfigure it, or that the church is too old and poor, or too rude and primitive, and decorations will be out of place. Either objection admits of a ready answer. In decorating, we use green leaves, flowers, and fruits, all Nature's, or God's, handiwork, and there is no human structure so perfect, that these will not

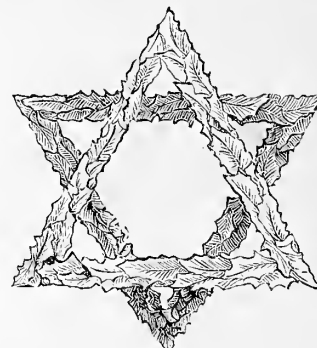


Fig. 1.—A STAR.

bring to it an added beauty, while all needed decoration can be done without driving a nail. This suggests the answer to the other objection; if our church is so mean, let us on this occasion cover its poverty. The occasion we celebrate took place in a manger, let us for once glorify our harn of a church. Having decided to decorate, the next question will be how much? This, and all other details, had better be left to the women who read the *American Agriculturist*. We will suggest to those to whom the matter is quite new, not to undertake too much. Have a definite plan of what is to be done, and let it include only what can be done well. If only the pulpit can be well decorated, be content with that; but usually, the whole chancel, or end of the church where the pulpit stands, by whatever name it may be called, as the part towards which all the congregation look, may be adorned. The rest will depend upon the architecture of the church; galleries, pillars, window-frames, heavy cornices, etc., offer opportunities that one with proper taste will take advantage of.

About the Materials.

The kind of green to be used, will of course depend upon the locality, some places affording a greater variety of evergreens than others. Hemlock is one of the most generally useful greens for both large and small work; did it last longer, we would place it as the best, if but one could be had;

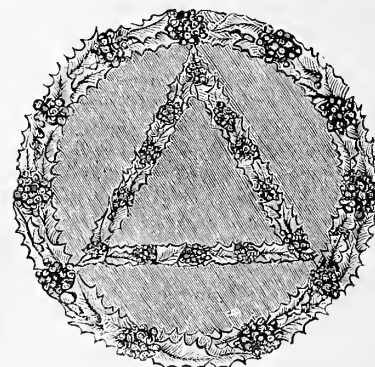


Fig. 2.—CIRCLE AND TRIANGLE.

but its leaves soon drop, and become littery. Arborvitæ, Spruces, Laurel, Ink-berry, Holly, and Rhododendron, among the trees and shrubs are the most available; the Lycopodiums, especially the kind known as "Bouquet-Green," or "Ground Pine," are most useful for small work. Those named, are all wild; where materials can be spared from cultivation, Golden and other Arborvitæ, Box, Ivy, and other evergreens, may, by judicious trimming, afford a goodly amount of useful material, and the plants be none the worse for it.

Flowers and Berries.

Those who have been fortunate enough to dry a lot of everlasting flowers, will find them come into play, and berries are especially useful. A few scarlet ones will give a wonderfully fine effect. The most abundant berries for this purpose, are those of

the Winter-berry, or Black Alder, and those who live where Holly grows, will not fail to secure the berries of that. It will be proper to make the pulpit or desk, the center or most prominent point of the decorations, placing the most elaborate work there, and making the rest subordinate to that. The most generally useful decorations are wreaths, as they may be employed in a variety of ways; they may entwine pillars, surround arches and window-frames, and used in festoons anywhere. Next to wreaths, circles, or garlands; and then come in various ornamental designs more or less elaborate.

To Make a Wreath.

A cord or rope, according to the size of the wreath, is required, some small but strong twine, and the green broken into bits, large or small, as may be needed, as the wreath is to be thick or slender. In a division of labor, some will prepare the material, while others make it up. Hemlock, Aborvitæ, Box, or Ground Pine, is to be broken into bits of the needed size, the last named, being often used whole; a loop is made in the rope or cord, by which it may be hung to some convenient door-knob nail, or other support; a piece of the green is laid upon the rope and tied fast with the twine, which, for convenience, should be in small balls, or better wound upon a stick as boys wind a kite string. Another piece of green is laid on to lap over the first, and made fast with a simple loop of the twine, or what the sailors call a "half-hitch." The work is continued in this manner, each bit overlapping the tied end of the one before it, and each fastened with a loop. The size of the wreath is governed by the size of the twigs and the manner of lapping; in every case, the work should be even and alike. When the wreath is of the proper length, fasten the last pieces by several turns of the twine, and tying it very securely.

To Make Garlands and Stars.

Split a barrel hoop, or whittle it down, or form circles of willow wands or whatever shoots will answer, and make them fast by tying the ends with twine, or what is better, fine copper wire. The frame-work being made, it is to be covered in the same manner as the green is fastened to the cord to make a wreath. A star may often be used with good effect, alternating with garlands, or by itself. These are easily made with two triangles of common lath placed across one another as shown in figure 1, they may be made narrow and covered in the manner already described. If large leaves, like those of Holly, Ivy etc., are to be used, the star may be made of stiff, brown paper, and the leaves sewed to it with black or green thread; this may then be stiffened by tacking it to a lath frame.

Ornamental Designs

can be made in great variety and as elaborate as one chooses. A simple design is shown in fig. 2; a triangle within a circle. To make this, get a circular board—a barrel head having the pieces fastened together with battens will answer; cover this neatly with white, crimson, scarlet, or blue cloth. Make the circle and triangle of willow with small twigs bound on, to cover one side only, or use large leaves, sewed to shapes of stiff, brown paper or thin paste-board; these may then be attached to the circular base by means of nails. The large design, fig. 3, is intended for the front of the pulpit or desk, or similar place. It consists of a Maltese Cross, a circle, within this a star, and inside of the star the accepted monogram to represent the name of The Saviour, I. H. S. (*Jesus Hominum Salvator*), as used in church decorations. The cross and star are best made of some thin wood; the circle may be of stiff paste-board; the cross and star are covered with white or colored cloth; paper may be used, but the effect is not so rich; the edgings to the cross, star, and the circle, are made with Holly, Ivy, or other leaves sewed to stiff paper shapes, and afterwards tacked on; the monogram, if used, may be made of card-board,

and covered with gilt or silvered paper. We give in fig. 4 another form of monogram, which may be easily constructed from the hints already given. Where berries or dried flowers are to be used on any of these designs, the fine iron wire known at the hardware stores as "binding wire," or a still finer kind, kept by dealers in florist's requisites, as bouquet wire, will be useful; it is very strong, and so fine as to be invisible at a little distance.

Household Notes and Queries.

BANGED HAIR.—We are glad that Faith Rochester records her protest against a fashion which, as with other styles, is new in her far Western home, while in Eastern cities it has run its course and is on its decline. There may be some of our readers, we trust there are many, who have never seen or

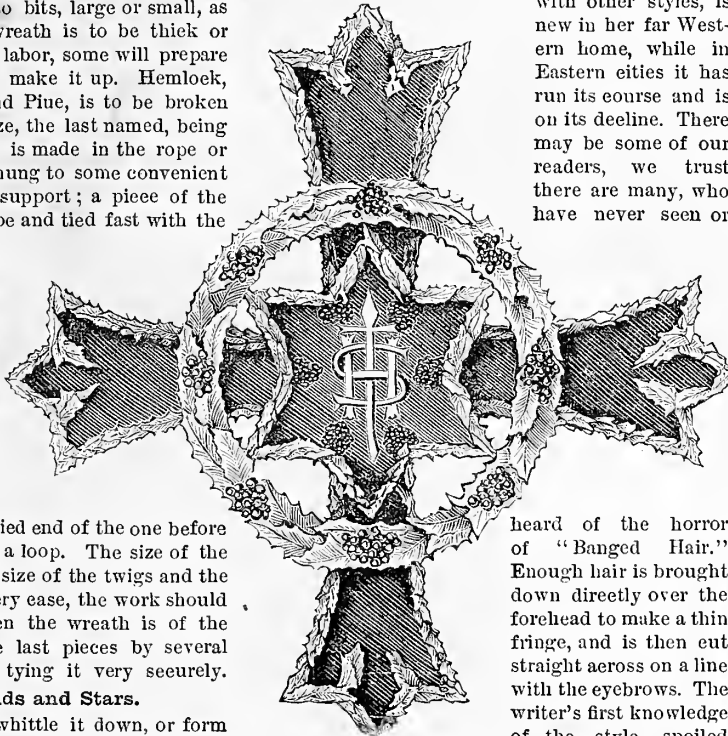


Fig. 3. DESIGN FOR PULPIT.

We were dining at the house of a well known gentleman, where the surroundings indicated culture and travel; after we were seated at the table, two young ladies of the family took seats on the opposite side, both having their hair thus disfigured. Never having heard of such a style, the suddenness of its appearance in such a place, its incongruity with the general appearance, dress, and position of the wearers, made it a surprise as unpleasant as it was sudden. When we saw the first young lady, the thought came that the hair had been so treated to hide a horrid scar, but the appearance of the other disposed of this idea. Anything more out of place, more unaccountable than this whim we have never seen. We once lived in a town where there was a family noted for its number of uninteresting children. Their circumstances did not allow of the employment of a barber, but when the hair of the children became too long, the mother cut it in the most impartial manner, straight around, front and rear alike. Their appearance was so peculiar that a waggish friend of ours used to say that Mrs. B. put a bowl over the children's heads as a guide, and cut even with the edge of the bowl. We never see a case of "banging" but we think of the numerous young B.'s with their hair cut round by the bowl.

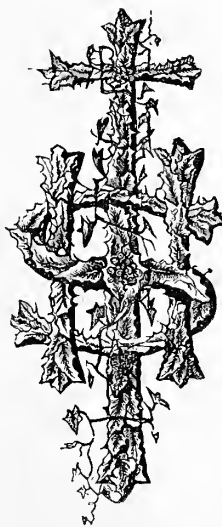


Fig. 4.—MONOGRAM.

HOW TO MAKE SCRAPPLE.—Last spring some of our house-keeper's circle asked for a recipe for "serapple"; knowing that the best way to get the recipe was to ask here for it, we did so in May last. Our answers came just at the beginning of hot weather, a time when they would be of no use, so we put them aside until cooler weather would bring the materials for making it. Over 20 answers came, and while we thank all who responded, we publish only two of the most unlike:

THE ILLINOIS METHOD WITH SCRAPPLE.—Mrs. H. T. F., Lee Co., Ill., sends the following. "Soak a hog's head, cleaned, and cut up into four or five pieces, in cold water over night, to remove blood; boil till the flesh falls from the bones, and can be easily made fine without chopping. The water should be about three gallons for a whole head, and should be kept up to that amount by adding more while boiling. Let stand until cool, take off and save the fat that rises, to use in frying. Warm it over the fire again, remove the bones, separate the meat into fine particles, without chopping; put the meat, with the liquor, back over the fire, and when boiling, stir in equal parts of Indian meal and buckwheat flour, to make a mush of the ordinary consistence; season well with salt, pepper, and sage; when done, pour into pans, to cool and keep until wanted. When used, slice and fry as you do cold hasty-pudding, using the fat previously taken off; fry to a nice brown on both sides, and serve. In cool weather it will keep for weeks.... It would not be right if we did not give a recipe for

"SCRAPPLE" FROM PENNSYLVANIA, as we have always understood that it originated among the Dutch settlers of that State. The following comes from "W. C. B.," Media, Pa., who says that recipes have appeared in some papers, with hardly a true feature in them. "W. C. B." (who insists that the true spelling is "serappel") says: "In Pennsylvania almost every one who raises hogs makes serappel, and those who do not, obtain a supply from the butchers, who make it in vast quantities. Headcheese is very little used here now, and serappel has to a great extent superseded sausage, as it costs but half as much, and is considered more wholesome. The upper part of the pig's head is used, divested of the snout, eyes, and ears. After soaking some hours in salt water, it is boiled, together with all the trimmings from the hams and shoulders, and the skins from the portions intended for lard. Boil until the whole is very tender, and the bones may be readily separated. A portion, but not generally the whole of the liver, is boiled tender, with the rest, when it is taken out, and crumbled up finely. The fat is skimmed from the top, and the meat, skins, liver, etc., are chopped with a sausage cutter. The whole is then returned to the boiler with a liberal supply of water, and when it boils, it is thickened with Indian meal alone, or a part buckwheat meal or wheat middlings. These are added gradually, as in making mush, with constant stirring. While the mixing is going on, the seasoning is added; usually salt, pepper, and sage. When it is so thickened, as to be stirred with difficulty, it is poured into tin pans or earthen basins to cool. It may be eaten without further cooking, but it is generally cut, like mush, in slices, and fried. Lard settles upon the top of each pan of serappel, so that no other fat is required in cooking it."

Over-Doing It.—Aunt Mchitabel thus sensibly writes from Penn Yan, N. Y.: "There is a good deal of sense and true taste in Faith Rochester's remarks on house decoration in the September number of the *American Agriculturist*; little touches here and there do brighten up a room, and make it more cheerful and home-like, but the truth is, that ladies who have a taste for fancy-work are apt to over-decorate their rooms until they too much resemble one that my sister saw last year in an interior town, and which she described to me as 'mottled, and bracketed, and wall-poeketed, and dried-grassed to death!' Certainly the owner of that room did not believe with Michael Angelo, that 'the strictly beautiful is the very purgation of superfluities.'"—There can be too much of a good thing.

BOYS & GIRLS' COLUMNS.

Spruce-wood Work.

In suggesting last month that you should lay in an abundance of stores with which to make little useful and fancy articles for presents or other purposes, we mentioned spruce twigs as a material from which a variety of very pretty things might be made. For making little picture frames, pen-racks, and such articles, small twigs are needed, but for the work we are about to describe, those from the size of a lead-pencil up to that of the finger will be better. We have seen very neat boxes made in imitation of a pile of logs that would not be very difficult for a boy who is careful in the use of tools. Figure 1 shows how these boxes look when finished; you can un-

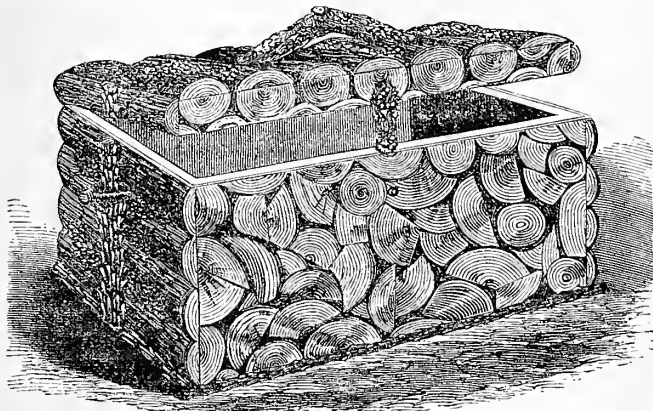


Fig. 1.—SPRUCE-WOOD LOG-PILE BOX.

derstand from the engraving how to manage all but the front and rear of the box, which represents the ends of the logs. To make this, some of the larger twigs are carefully split in halves and quarters, to be used with the whole ones and fit in among them. Here we may say, that if the leaves do not fall off of themselves, they may be readily removed by laying the twig upon a flat board, and scraping them in the direction of the leaves—from below upward, with a strong knife. Having the twigs, lay several of them side by side, using care to select those that will lie flat and touch one another for their whole length; then put strong glue on the parts where they touch and glue them together; when these are dry, pile a layer upon the first, gluing them to the twigs below, and to one another, letting the glue dry or "set;" add another layer, and so on until as many are put together as desired. If the gluing has been well done, you will have a solid block of twigs; when all is dry and firm, with a fine saw cut slices across the end of the block, as thin as may be required; these will need careful handling, but if they hold together until used, it is all that is needed. These are to be glued to the front and rear of the box, matching the sections to make a fit and if need be, putting in some bits sawed from single twigs to fill spaces. The engraving shows the rest; the ends are covered with split twigs,

each end, to appear like a brace to hold up the log-pile. Where there is sufficient surface, glue is all that will be needed to fasten the twigs to the box or to one another, but in some cases, as the handle, or the top row of logs, it will be better to use, besides the glue, slender brads, or strong pins with their heads cut off. The box should be lined according to the purpose for which it is to be used, fancy paper or tin-foil may be put on with paste. This being the general manner of working, various other articles besides boxes, may be covered with the twigs; we give some engravings to serve as hints, and your own ingenuity will no doubt suggest others. In figure 2 is a match safe, made like an old fashioned tankard; the body of this is a toy churn, to which the split twigs are glued, the lid is covered with the end pieces, with an acorn or a pine cone as a knob; the bands or hoops, and handle, are made of grape vine; a piece of sand-paper should be glued on the underside of the lid. The flower vase, fig. 3, is made from a glass or china vase of the desired shape. In the first place, the whole outside of the vase should be covered with muslin, put on with a thick paste of gum tragacanth; when thoroughly dry, the split twigs are glued to this; the handles are made by soaking the twigs in hot water until they bend easily, and bending them around pegs set in a board at proper distances, and tying them to hold them in position; when dry they will retain their shape; the edge of the vase in the engraving is finished with a row of the tips of spruce twigs where there will be found a bud at the very end, usually having two others under it. The napkin ring, fig. 4, may be made with a wooden napkin ring, or one may be made of

very stiff paste-board, lined according to fancy, and then covered with split twigs, cut very even, and neatly matched at the edges. In fig. 5 we have a design which may be filled and covered for a pin-cushion; if lined with tin-foil it

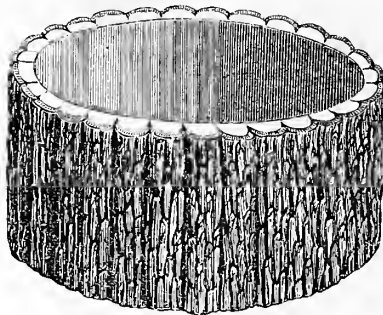


Fig. 4.—NAPKIN RING.

will answer as an ash receiver, or if made large enough, and given a cover, will do for a puff box. All of these articles may be ornamented, if desired, by gluing bits of lichen, spruce buds, acorn caps, and such things, here and there. Other wood besides spruce may be used, especially that which has a pleasing bark; it should be seasoned by keeping it in a place where it will dry slowly.

GLUE for this and other fancy work should be strong, and put on hot; very little will be required, and there should never be enough to run. To make it, get the best cabinet maker's glue, cover it with cold water, and leave it in a cool place to soak; in a few hours it will be swelled up and soaked through, as will be known by its being soft and bending easily; pour off all the water, and place it on the stove, set in a sauce-pan or other vessel of water; as soon as melted and hot it will be ready for use. When cold it will become hard, but may be melted again by placing the vessel in hot water—it must never be put directly upon the stove, but always in a sauce-pan of water. A tin pepper or spice box will answer for the glue, and a fruit can will do to hold the water. Work of this kind looks better if finished with one or more coats of

SHELLAC VARNISH, which is better for this purpose than ordinary varnish; it may be had at the paint stores, or you can make it yourself by putting shellac into a wide-mouth bottle, and adding alcohol enough to cover the shellac; set this in a quite warm place, or in a sauce-pan of cold water, putting in some sticks or wires to keep the bottle from touching the bottom of the pan; place on the stove and heat gradually. The shellac will soon dissolve, and if too thick to apply smoothly, thin with more alcohol. Be careful not to work with this near a lamp, and remember that not only will alcohol burn, but that its vapor will take fire.

Hoorah for Crandall!—We have long considered Mr. C. M. CRANDALL as the greatest friend of the Little Folks in all this country, if not in any other

country. Millions have been amused, delighted, and instructed, too, by his building blocks and various other contrivances. Even the children of staid old London, in England, have sent over here for many tens of thousands of Crandall's blocks, etc., and they have come for

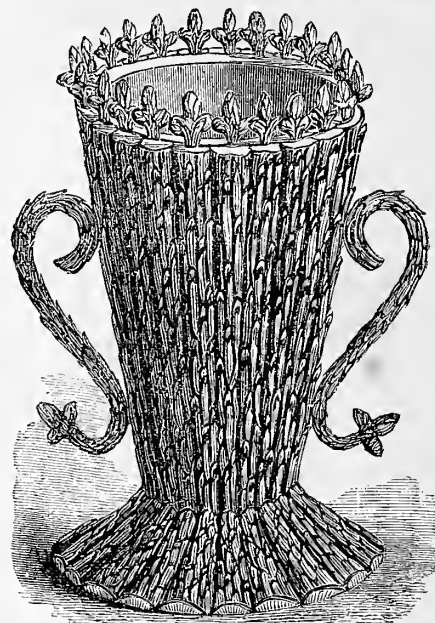


Fig. 3.—FLOWER VASE.

them from other parts of Europe, even from Germany, the land of toy-makers. Well, just now, Mr. Crandall has beaten himself again, more completely than ever before, too. His new "**Happy Family**," which none of you have seen yet, beats not only himself, but even Barnum, also, because you can each have a "happy family" right at home. You get a box, looking like a wagon-box at first; but it opens and opens, and before you get through with it, you have a menagerie on wheels—a wagon big enough and strong enough almost for a small boy to ride on—a cage of 15 animals and their keeper, Lions, Tigers, Chimpanzee, Rhinoceros, Bear, Baboon, etc., behind bars, looking as natural as life, with movable legs, etc. They are so arranged that you can combine them a thousand ways. When tired of arranging, training, and exhibiting the animals, you can set them aside and use the wagon. Everybody who has seen this, says it is the greatest thing in the way of amusement for children that has yet been brought out. They have started the factory running night and day, so as to get as many sets made as they can this month, in order that as many children as possible may be supplied before the next holidays. Probably the advertising pages will tell you something about it. A gentleman took the first sample box to show to a friend in London, and as soon as he got there, the Ocean telegraph said: "Send the first 25 cases (300 sets) made, over here."

Fine Things for Boys and Girls.

EASILY OBTAINED FREE.

In arranging their Presentation Articles, or Premiums, the Publishers have provided a large number of things



Fig. 5.—ASH RECEIVER.

that will specially delight their Younger Readers. They offer them on such terms, that almost any Boy or Girl of 8 to 14 years, or any older young people of 15 and upwards, can easily get free one or more very desirable articles. Any one can show this paper, and persuade two, or three, or more persons to subscribe for it, in return for which they will get something that they just want. We like the young people to all take hold of this for two reasons. First: they will be pleased in receiving the premi-



Fig. 2.—MATCH SAFE.

and the top with a layer of split twigs, over which is a row of whole ones; a crooked piece may be put on for a handle, and if desired, an upright twig in the center of

ums; and, second, they will learn business, very useful to learn early in life. The Senior Publisher of this paper took his first useful lesson in publishing by canvassing for a club of subscribers, while a student. For many years we have noticed that boys and girls are often more successful than older persons, when they go and show a paper, tell what it contains, and its usefulness, and ask a man to take it. Let every one of our young readers examine the Premium Sheet, see what is offered, select what they most want, and determine to get subscribers enough to obtain it free, and then persistently stick to it, until they succeed. If the first dozen persons asked refuse, try them again, and go to the thirteenth, and fourteenth person, and so on. What you determine to do, you can do.

The Young Microscopist's Club.

In telling you about what are called the lower orders of plants—such as bear no regular flowers and seeds—I began with those that are regarded as the highest among such plants; that is, those which have distinct and complete parts, and most nearly resemble in these respects the flowering plants. Thus, the ferns have a root, a stem, and green leaf-like fronds; the mosses have roots, stems, and leaves. Both ferns and mosses have also a regular place for bearing their spore cases. When we came to the lichens, this distinctness of parts was lost; in the flat lichens there is merely the upper and under surface of an irregular flat plate, and the spore-cases, or fruit-dots, are placed irregularly on the surface.

WE NOW COME TO THE FUNGI,

the plural of Fungus; it is pronounced with a soft g, as if spelled *Funji*. The Fungi are still less like ordinary

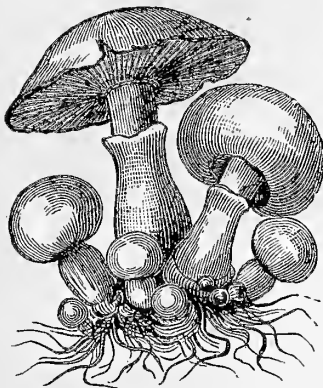


Fig. 1.—COMMON MUSHROOM.

plants. In the ferns and mosses, we find roots and green leaves, and have reason to infer that, like higher plants, they live upon the nourishment they draw from the soil and the air, and the lichens mainly live upon the air and what the rains bring them. The fungi are very different in their manner of living; they feed upon the substance on which they grow; it may be living or dead vegetable or animal substances—but they are always robbers or scavengers, feeding upon food already prepared for them. This being the case, the fungi never have leaves or other green parts, and most of them, if they do not prefer darkness, can live as well in the dark as in the light. The family of fungi is so large, and it contains plants so unlike, that it is difficult to make a simple description that will include them all. There are fungi so small that it takes a powerful microscope to see them, while the puff-ball is often a foot across, and some fungi are larger than this. The fungi you are most likely to notice are those large and showy kinds called

MUSHROOMS AND TOADSTOOLS.

The eatable mushroom, common in the fall of the year in pastures, will serve to illustrate this set of fungi. As you find it, it appears as shown in fig. 1, but this is only the above ground portion, and is what in these plants corresponds to the fruit. There is below the surface, a mass of fine, white threads, commonly called the "spawn," and which botanists call the *mycelium* (from the Greek word for mushroom); this is the growing part of the plant, so to speak, and answers to the roots and stems of other plants. This spawn feeds upon the matter it finds underground, and when strong enough, it throws up the parts that are to provide

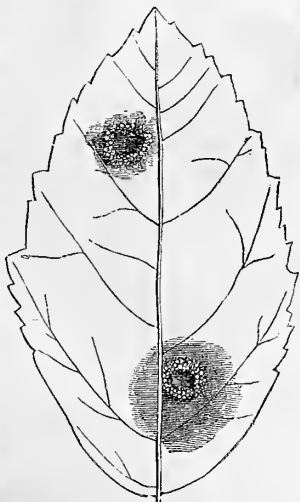


Fig. 2.—CLUSTER CUP ON LEAF.

for new plants, the parts that produce the spores. On the under side of the cap of the mushroom, you find thin plates running from the center to the edge, and if you had a very powerful microscope, you could see that the spores were produced by these plates. But the greater number of the fungi, and the most important in the mischief they do, are so small, that they are only to be seen by the naked eye when in a mass, and to make them out properly requires a much more powerful microscope than ours. The most common of these small fungi are the moulds we find so common on vegetable and animal substances, on stale bread, on cheese, on decaying fruit, and in numberless other places. I had occasion last month to speak of mould found on a correspondent's boots; that figure, here given (fig. 4), gives a general

idea of the manner of growth of these fungi; it consists of the most minute threads, which grow and spread rapidly; these are the *mycelium*; after a while some threads will shoot upwards from this and bear spores at the top. All of the mildews, the smuts, the rusts, and other pests of the farmer and fruit-grower, are minute fungi of one form and another, which live upon the grain, the grass, the leaves of the fruit trees and vines, and the fruit itself. A vast number live upon wild plants that are not known to do any damage, but which you will find very interesting when examined by your microscope. Among the prettiest and most noticeable of these

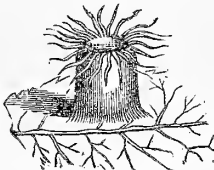


Fig. 3.—CLUSTER CUP.

ARE THE CLUSTER-CUPS, so called, as they appear as little cups in clusters upon the leaves and stems of various plants. One of the largest of these I ever saw, was on a pear leaf, and is shown in fig. 2. These have a growing portion, or *mycelium*, that lives in the substance of the leaf, and the cluster-cup is what answers to the fruiting part. In fig. 2, the leaf was brown and dead in spots, showing where the *mycelium* had been feeding and had killed it. The magnified cluster-cup is shown in fig. 3; it has around the edge, a little fringe, which spreads in moist weather and curls up in a dry time; within the cup are the spores, which you know serve the same purpose that seeds do in other plants, i. e., to produce new plants. You will find cluster-cups on a great number of wild plants; sometimes so thick that they run together, and when old, form a shapeless mass. When you find cluster-

cups—and they will be oftener on the under than on the upper surface of the leaf—you can readily preserve them by drying the leaf between the pages of a book, and make a note of the kind of leaf on which it grows. Some of the cluster-cups are of a pretty orange color, while others are brownish. Wherever you find an unusual appearance upon a leaf, it will be well to examine it with your microscope, as you may find some fungus that will be worth looking at. You will find them at almost all seasons of the year, and hunting for these, mosses and other such plants, may be kept up long after other plants are killed by the frost. You all know that some fungi are used as food, and that others are poisonous, and no doubt several of you will write to ask how to tell them apart. Indeed, one of your number, Miss Annie J., of Knoxville, Tenn., put the same question several months ago; my answer was put in type, but it failed to find room in the paper then, and I give it here. Her question was—"How can I

TELL A MUSHROOM FROM A TOADSTOOL?"

and she probably could not give a more difficult one. What is generally called "The Mushroom," is *Agaricus campestris* of botanists; it (fig. 1) is the best known, and the one that is often cultivated. In the popular idea, all others are "toadstools," and to be regarded with suspicion. Instead of there being but one fungus that may be eaten, the late Rev. M. A. Curtis, of South Carolina, found over a hundred different kinds, some forty of which grew near his home, and which he ate regularly. Miss Annie's question means, "how can I tell between a wholesome fungus (or mushroom) that should be eaten, and a poisonous one (or toadstool) that should be avoided."

—This is a question which I can not answer. If I were to ask Annie to so describe her most intimate friend, so that I should be sure to know her at once, if I met her on the street in Knoxville, she would find it very difficult to do so—though were I to be introduced to her friend, and see her but for a minute, I should know her at once afterwards. Here is just the trouble with these fungi. It is not possible to describe them in popular language, so that one who has never seen them can be sure that he has a safe one, but if she can see, examine, smell, and

taste, she will be sure to know it, when she sees it again. Now, unless Miss Annie can get some friend who knows, to point out the eatable ones, I do not think I can help her. All the directions to test them with rubbing silver or putting salt upon them, are useless.

Aunt Sue's Puzzle-Box.

NUMERICAL ENIGMA.

I am composed of 23 letters:

- My 22, 19, 14, 19, 7, 19, 17, is a kind of cloud.
- My 4, 8, 18, 12, 19, 16, is another kind of cloud.
- My 3, 10, 13, is what farmers are busy with in July.
- My 5, 6, 7, 9, is part of my whole.
- My 1, 21, 13, is happiness.
- My 20, 2, 22, 23, is a protection.
- My 16, 15, 11, is a number.
- My whole is a story and its author. LOUISA J. SPEED.

PI.

Het drowl si a koolgin-slugs, dan siveg kabe ot reyve nam het intoelefer fo shi uow cafe. Wrouf ta ti, dan ti liwl ni runt kool rusly poum ony; hagnl ta ti, dan thiw ti, dan ti si a lojly, dink nomoeppain.—*Keraychal*.

ANAGRAMS.

1. Trip Laura C. 2. Sly chairs. 3. I tie bold man. 4. Lament, love. 5. A vast code. 6. Singes deer. 7. One can not stir. 8. Trying fire. 9. Sand places. 10. Cased ape.

WELL-KNOWN CITIES CONCEALED.

1. What royal, good cloth this is, Bob.
2. A wooden cellar, Jacob! O! stone is better.
3. I am to be mediator on Tom's account.
4. Please give me the chart for Dan.
5. We rode up the hill on donkeys.
6. In the evening we went to see "Romeo and Juliet."
7. I got that rent on a blackberry-bush.
8. She placed the gauzy fabric on corded silk.
9. Is a lemon as sour as a lime?

GEOGRAPHICAL DOUBLE ACROSTIC.

The initials form a portion of Asia; the finals, a noted "Rock" of Europe.

1. A German city with a University dating from 1386.
2. The birthplace of the celebrated "Fra Diavolo" in South Italy.
3. A post office in Barren Co., whose initial and final letters are the same as those of a celebrated leader of the Sepoy revolt in 1857, and also of his Hindu title of nobility.
4. A U. S. western city, 6,000 feet above the sea, celebrated, among other things, for its wonderful system of irrigation.
5. Another marvel of the West, which thought it had a great future in "Train."
6. A village in N. Y. once noted for its "stated preaching of the Gospel."
7. A suburban village of New York City.
8. A city of Peru.
9. A river of New York.

J. A. B.

CROSS-WORD.

My first is in satin but not in silk,
My next is in cheese but not in milk,
My third is in made but not in wrought,
My fourth is in mind but not in thought,
My fifth is in brass but not in tin,
My sixth is in crime but not in sin,
My seventh is in churl but not in thief,
My eighth is in bush but not in leaf,
My ninth is in onion but not in leek,
My tenth is in look but not in seek,
My eleventh is in man but not in boy,
My twelfth is in glee but not in joy,
My thirteenth is in smile but not in laugh,
My fourteenth is in some but not in half,
And now if you make my letters agree,
A character in Dickens you will see.

CHARADE.

My first steals forth as night descends,
And prowls around in search of food,
And many longing wishes sends,
T'wards old dame Partlett and her brood.
My second, in the good old time
Was gift of love, and battle gage,
The theme of many a tuneful rhyme
By Poet, Troubadour, and Page.
My whole adorns where'er it grow,
In garden, field, or leafy dell;
In skillful hands 'twill health bestow,
Though death lurks in each tiny cell. C. K. S.

ANSWERS TO PUZZLES IN THE SEPTEMBER NUMBER.

CLASSICAL ACROSTIC.

Hereules—Saturnus.

H—erme—S
E—chidn—A
R—udi—T
C—ri—U
U—iterio—R
L—acoco—N
E—he—U
S—partaeu—S

HOLLOW SQUARE.

F A T H E R
A N
R N
M D
E E
R A T H E R

NUMERICAL ENIGMAS.—1. No man ever became a villain at once. 2. Education.

HIDDEN HOUSEHOLD ARTICLES.—1. Dish. 2. Cnp. 3. Pan. 4. Stool. 5. Fork. 6. Towel. 7. Trav. 8. Bowl. 9. Chair. 10. Stove.

CROSS-WORD.—Loving kindness.

SQUARE-WORD.

S C A R S
C R O A K
A O R T A
R A T A N
S K A N E

About Aunt Sue.—Aunt Sue has for a long time felt that the large correspondence that grew out of the answers to puzzles, required more time than she could spare, and finding her home cares increase—for she has grand-children who have demands upon her time—she can not take the entire care of the Puzzle Box. She will, however, contribute to it when she can; but hereafter the answers to puzzles and all matters that were formerly sent to Aunt Sue, may be directed to "The Doctor," No. 245 Broadway, New York.

About Some Common Birds.

It is pleasing to learn that so many of our young friends take so much interest in birds. We know this by the questions that come to us about them; only a few days ago a youngster in far off Washington Territory wrote us concerning birds. Besides the pleasure that comes from observing and studying any natural objects,



Fig. 1.—BOBOLINK IN SUMMER.

the interest of young people in birds will lead to one important result. In watching the different birds you will notice what kinds of food they live upon, and when you find that most of the small birds feed their young upon insects, especially the caterpillars that are so destructive to plants, and see the wonderful number of these that a nestful of young birds need in the course of a day, you will see that the birds are really useful, and will encourage them rather than drive away or destroy them. Chas.

H. M., Maryland, has been told that the Reed-bird is the same as the Bobolink, and wishes to know if it is so. The difference between the summer and winter dress of birds has puzzled others besides Master Charles, and even experienced naturalists have been deceived and taken the winter state of a well known bird for another species. The change in the Bobolink is not confined to its dress, but in changing its coat it changes its manners or habits. The two engravings show, as well as can be done in black and white, the bird in its two suits, that at the left-hand being the summer, and the other the winter plumage. The Bobolink as it comes to the Northern States in spring is well known to every one who lives in the country; the male has a very neat suit of black and cream-colored and whitish markings, while the female with her dress of yellowish brown, with some black streaks, does not look at all like the mate of so gay a fellow. What youngster, boy or girl, does not know the Bobolink? With its lively ways and merry song it seems to be the happiest of all birds, and as fond of a frolic as a

school boy. Many have tried to put his song into words, imagining that his sweet notes have some resemblance to our harsh language. One of these is, "See little Joe, see little Joe, kissing Judy, kissing Judy, Oh fie!" and there are others, all over the country. When summer is about over, and the young brood is raised, the male Bobolink stops all his frolicking, takes on a sober dress like that of his mate, and so changed is he that he even

stops singing; instead of being full of life and fun, he seems to care for nothing but eating. It soon starts on its journey southward, and great flocks are found on the marshes of the Middle States, and as they get further South they visit the rice fields in immense numbers, and are there called the Rice-bird or Rice Bunting. The poor bird becomes a real glutton, but it eats only that it may be eaten, for it is shot down by thousands to supply the demand of the markets. Those who would not think of eating a Bobolink, find the Reed-bird or Rice-bird a delicious morsel. In its travel southward it even finds its way to the West Indies; it arrives there from our Southern rice-fields so fat that it is known as the "Butter-bird." While the majority of our birds, like the Bobolink, leave for warmer lands at the first approach of cooler weather, others, like faithful friends, stay with us summer and winter, and though while other birds are abundant we do not much notice these, they are in the winter very welcome, as they come about our houses, and give life to the landscape. One of the best known of these winter birds is the Black-cap Titmouse, or as it is more commonly called, the Chickadee, a name taken from its note. Very neat little birds they are—marked, as seen in the lower engraving, with a black head and throat in strong contrast with the white of the breast and

under parts, while the back and upper parts are grayish brown. They are too busy in summer with their brood to care much for our company, but as other birds leave, and cold weather comes on, they draw nearer and nearer to the house, and if encouraged will become regular in their visits and afford much amusement by their pretty ways. One peculiarity of the Chickadee, is, that it does not seem to care much whether its head is up or not, and in alighting it is quite as likely to point head downwards

If you wish to make friends with the winter birds, have a regular place to put their food; if a window shelf or the roof of a piazza be chosen, do not forget to brush away the snow; feed crumbs, seeds, and broken grain regularly, and they will soon learn to come at the time. The Chickadee is not much of a singer, its note being confined to *Chiveek-a-dee-dee-dee*, but it gives it in a pleasant and cheerful voice. It makes its nest in small hollows in



Fig. 2.—BOBOLINK IN AUTUMN.

a tree; taking the old hole of a Wood-pecker, or if it finds a partly decayed place it makes a hole, being careful to carry off the chips and drop them at a distance, as if afraid that they might lead to a discovery of the nest. It raises quite a large brood, from 6 to 10 eggs being laid, and of course such a family consumes an immense number of insects; it is estimated that each pair of these birds eat at least 500 insects daily through the breeding season. Besides these, the old birds in winter are very

sharp at finding the eggs of insects and cocoons that are hidden under the loose bark and in other crevices. The Chickadee has so many good qualities that we dislike to say anything bad about it, but it has been accused of a very mischievous habit—that of picking off and destroying the buds of fruit and other trees. On the other hand it is said that the bird only pecks at those buds that already contain a grub of some kind, that it is the insect that it is after; and that what seems like mischief on the part of the bird, is really a good act, as it prevents the insect from doing further damage. We hope that this may prove true—at any rate here is a good chance for some of you sharp-eyed boys to observe; if you find the Chickadees busy among the

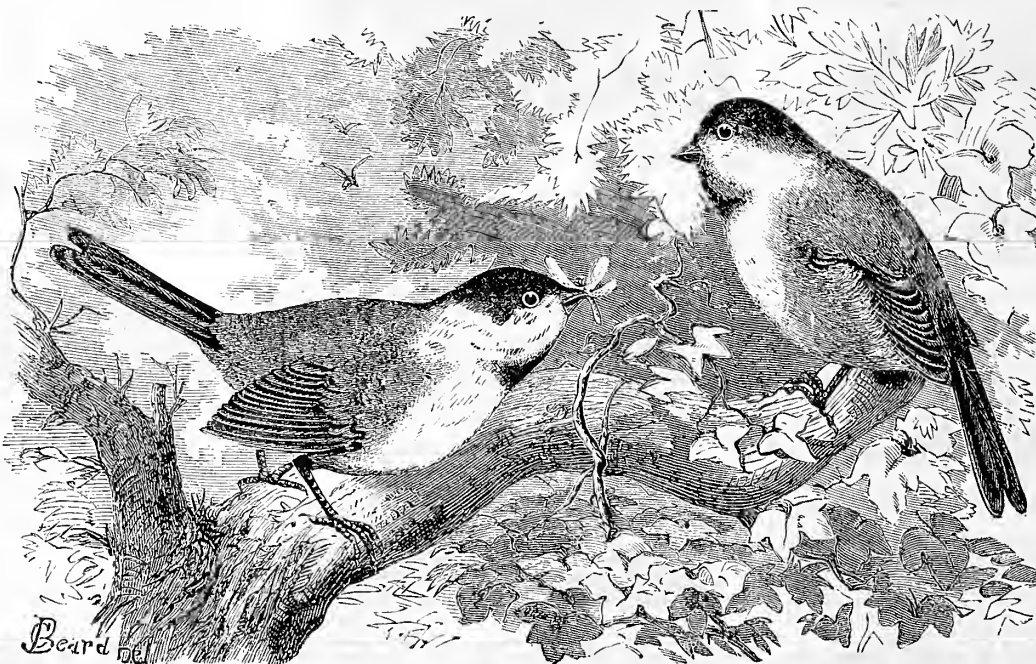


Fig. 3.—CHICKADEE, OR BLACK-CAPPED TITMOUSE.

as in any other way, and they seem to be fond of all sorts of gymnastic tricks, turning over and under a twig as if they were exercising on a trapeze. These, as well as the other birds that stay with us during the winter, fare poorly when the ground is covered with deep snow, and are then especially in need of the food you may give them.

fruit trees, watch their doings, and if any buds are picked off, examine these for traces of a grub or caterpillar, and let us know the result. We shall be sorry to learn that the little friend who does so much to make the country pleasant in winter, destroys the buds of fruit trees without any object, but through pure mischief.

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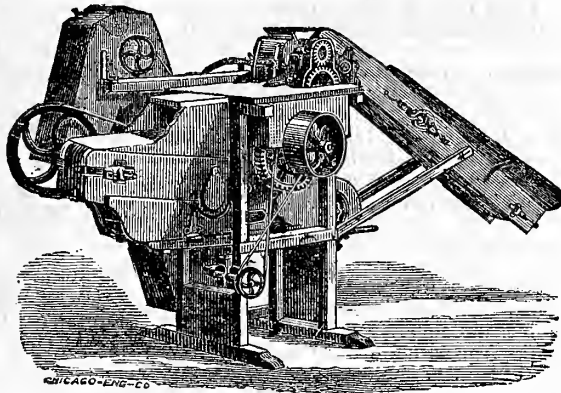
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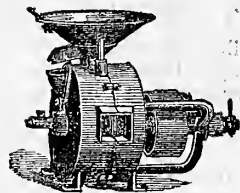
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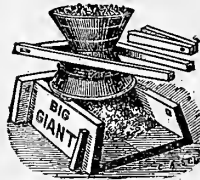
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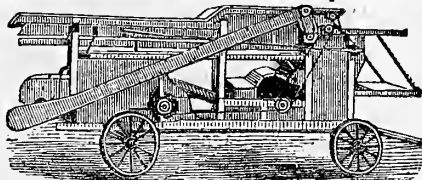


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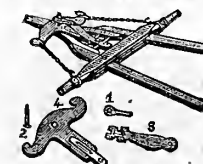


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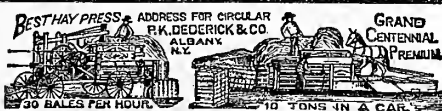
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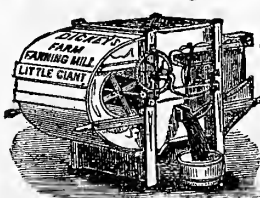
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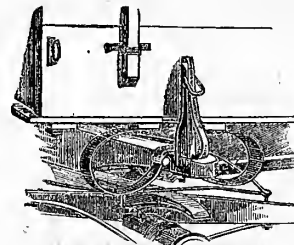
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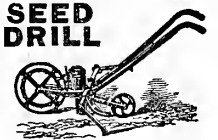
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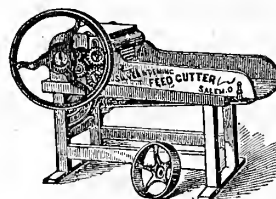
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What Shall We Read?

A monthly magazine has become almost indispensable to every one who desires to read the writings of the best contemporary authors, and to be informed of the most important events in literature, science, and art. More and better reading, and handsomer illustrations, can be supplied at far less cost in this form than in any other. For instance, the numbers of SCRIBNER'S MONTHLY for one year contain almost *two thousand* large octavo pages, filled with essays, stories, poems, descriptive articles, and reviews by the first American and foreign authors, and illustrated with more than six hundred original wood engravings. When bound, the twelve numbers make two large, handsome volumes which contain more matter than a dozen of the ordinary subscription books, and which can take their place on the library shelves as permanent records of the best literature of the year.

Attractions of Recent Volumes.

This is especially true of SCRIBNER'S MONTHLY during the year just closed, the two volumes XV and XVI, being more rich in pictorial interest than any which have preceded them. The first of these volumes has as frontispiece a PORTRAIT OF ABRAHAM LINCOLN, drawn from a rare photograph by Wyatt Eaton and engraved by T. Cole; the frontispiece of the second is a PORTRAIT OF WILLIAM CULLEN BRYANT (from life), by the same artist and engraver. The two volumes contain the whole of Edward Eggleston's "Roxey," the concluding chapters of Adeline Trafton's "His Inheritance," and the beginning of H. H. Boyesen's "FALCONBERG;" the exquisitely illustrated papers, by Mr. Brewer, on BIRD ARCHITECTURE; articles on American Sports, profusely illustrated, including "Canvas-Back and Terrapin," "Deer-Hunting on the Ausable," "Fox-Hunting in New England," "Moose-Hunting in Canada;" papers on American Farm Life, illustrated by some of the leading artists of the country; Maurice Thompson on Archery; Mary Hallock Foote's Descriptions of California, illustrated by herself; Col. Geo. B. Waring on Horses; John Burroughs on Birds and Out-Door Life; W. M. Tileston on Dogs; Dr. Morton on the South African Gold Mines; Stories by Bret Harte, Saxe Holm, Rebecca Harding Davis, Henry James, Jr., Frank R. Stockton, George P. Lathrop; Poems by R. H. Stoddard, E. C. Stedman, Bret Harte, H. H. Boyesen, H. H. Celia Thaxter, J. T. Trowbridge, etc.

Special Arrangements for 1878-9.

"Haworth's," by Frances Hodgson Burnett, the author of "That Lass O'Lowrie's" will be the leading serial of SCRIBNER for 1878-9. It is the longest story Mrs. Burnett has written, and will be more profusely illustrated than any serial which has yet appeared in the magazine. Mr. Boyesen's "Falconberg" will run through a part of the year; to be followed by a serial from a new writer, Mr. George W. Cable, of New Orleans. His novel will exhibit the state of society in Creole Louisiana, about the years 1803-4-5, the time of the Cession, and a period bearing remarkable likeness to the present Reconstruction period. The series of portraits of American poets will be continued during the coming year, the next being that of Longfellow (in November). These portraits are drawn from life by Wyatt Eaton, and engraved by T. Cole. They will appear as frontispieces of four different numbers, during the magazine year. The magazine is now having prepared several articles on the leading Universities of Europe. They will be written by an American College Professor—Mr. H. H. Boyesen, of Cornell (author of "Falconberg," etc.)—and will include sketches of the leading men in each of the most important Universities of Great Britain and the Continent.

Among the illustrated papers in preparation are "Studies in the Sierras," by John Muir, the California naturalist. The series of eight or more papers now to appear will sketch the California Passes, Lakes, Meadows, Wind-Storms, and Forests, including the first description ever given of the coniferous trees of the Sierras. Mr. Herbert H. Smith, of Cornell University, a companion of the late Prof. Hart, is

now in Brazil, with Mr. J. Wells Champney (the artist who accompanied Mr. Edward King in his tour through "The Great South"), preparing a series of papers on the present condition,—the cities, rivers, and general resources of the great empire of South America. The "Johnny Reb" Papers, by an "ex-Confederate" soldier, will doubtless be among the raciest contributions during the coming year. They are written and illustrated by Mr. Allen C. Redwood, of Baltimore. Illustrated contributions are also announced on Canada, American Art and Artists, American Archæology, American Inventors, Lawn-Planting for Small Places; also, Essays by Prof. Sumner, Horace White, and others, on the National Banking System, the Patent System, the New South, etc., etc.

The Latest Number.

We desire to call especial attention to the November number of SCRIBNER'S MONTHLY, upon the preparation of which great care and expense have been bestowed. We shall print as a first edition 90,000 copies. The number will contain the opening chapter of "Haworth's," and the continuation of Mr. H. H. Boyesen's "Falconberg." A biographical paper on Longfellow, with a large frontispiece portrait by Wyatt Eaton, engraved by Cole; "A Night with Edison," the fullest and most authentic account yet published; "Johnny Reb at Play," the first of several non-partisan papers of life in the ex-Confederate Army; "Farm-Life in New York," by John Burroughs; "The Spelling Bee at Angel's," by Bret Harte; "Fort Chamblay, on the Richelieu River," by Henry Sandham; "A Wind-Storm in the Forests of the Yuba," as observed from a tree-top, by John Muir; "A Modern Playwright (Eugène Scribe);" "The Apparition of Jo Murch," and "Our Patent System, and what we Owe to it," by an expert; "Parsons and Parsons," by Edward Eggleston, etc., etc. For terms, see paragraph "How to Subscribe," at foot of the page.

What Do Our Children Read.

The reading, which, unknown to parents, finds its way into the hands of their children, is often of the very worst kind. It is stated that there are twenty-five pernicious story papers for boys and girls, published in New York City, alone, and their popularity is shown by the fact that these vicious sheets have a circulation of over 375,000. They are printed on cheap, poor paper, are widely advertised, and are offered for sale at prices which enable even the poorest children to obtain them. Prof. W. G. Sumner, of Yale College, speaking of the effect of this literature upon the young, says:

"We may generalize the following, in regard to the views of life which these stories inculcate, and the code of morals which they teach:

The "Dime Novel" Code.

"The first thing which a boy ought to acquire, is physical strength for fighting purposes. The supposed code of English brutality prevails, but it is always mixed with the code of the revolver, and in many of the stories, the latter is taught in its fullness. These youngsters generally carry revolvers, and use them at their good discretion.

"A boy ought to cheat the penterious father who does not give him as much money as he finds necessary, and ought to compel him to pay. A good way to force him to pay liberally, and at the same time to stop criticising his son's habits, is to find out his own vices (he always has some), and then to levy black-mail on him.

"As to drinking, the bar-room code is taught. "Quiet home life is stupid and unmanly. Boys brought up in it, have to work hard and to bow down to false doctrines which parsons and teachers, in league with parents, have invented against boys. To become a true man, a boy must break with respectability and join the vagabonds and the swell mob.

"No fine, young fellow, who knows life, need mind the law, still less the police. If a father is rich, the son can easily find smart lawyers who can get him out of prison, and will dine with him at Delmonico's afterward.

"It is impossible that so much corruption should be afloat and not exert some influence. Great harm is done to boys by the nervous excitement of reading harrowing and sensational stories. Parents and Teachers ought to know what the character of this literature is."

An Ideal Children's Magazine.

It was to counteract this poisonous element in children's literature, that Messrs. SCRIBNER & Co., in 1873, began the publication of St. NICHOLAS, an Illustrated Magazine for girls and boys, with Mrs. Mary Mapes Dodge as Editor. Five years have passed since the first number was issued, and the magazine has won a position second to none. It has a monthly circulation of over 50,000 copies. It is published simultaneously in London and New York, and the transatlantic recognition is almost as general and hearty as the American. Although the progress of the magazine has been a steady advance, it has not reached its editor's ideas of best, because her ideal continually outruns it, and the magazine as swiftly follows after. Today, St. NICHOLAS stands alone in the world of books; and in Europe, as local critics admit, there is no magazine for young people that can at all compare with it. It is not surprising that the New York Tribune said of it: "St. NICHOLAS has reached a higher platform, and commands for its service wider resources in art and letters than any of its predecessors or contemporaries;" or that the London Literary World has said: "There is no magazine for the young that can be said to equal this choice production of Scribner's press."

Good Things for 1878-9.

Mr. Frank R. Stockton's new serial story for boys, "A Jolly Fellowship," will run through the twelve monthly parts—beginning with the number for November, 1878, the first of the volume—and will be illustrated by James E. Kelly. The scene of this story, like that of the very successful one, "What Might Have Been Expected," published in St. NICHOLAS, is laid in the South. For the girls, a continued tale, called "Half-a-dozen Housekeepers," by Katharine D. Smith, with illustrations by Frederick Dielman, will begin in the same number; and a fresh serial by Susan Coolidge, entitled "Eyebright," with plenty of pictures, will be commenced early in the volume. There will also be a continued fairy-tale called "Rumpty Dudget's Tower," written by Julian Hawthorne, and illustrated by Alfred Fredericks. About the other familiar features of St. NICHOLAS, the editor preserves a good-humored silence, content, perhaps, to let her five volumes already issued, prophesy concerning the sixth, in respect to short stories, pictures, poems, humor, sketches, etc., etc.

The November Number.

Attention is especially invited to the November number now ready. It contains 72 pages, and its illustrations throughout are fine and varied. It begins two splendid serials:—Its shorter papers represent a wide range of subject—History, Travel, Fun, Poetry, Adventure, Science, Natural History, Home-life, Sport, and lively narrative—the whole crowned by an appropriate Thanksgiving story.

One long article and two poems bear the signature of Mary Mapes Dodge, the Editor. One very "taking" feature of the number, is a fine portrait of FRANK R. STOCKTON, accompanied by a sketch of his life. Then there is a beautiful poem by Lucy Larcom; a finely illustrated account of the new style of city railroad in San Francisco, and many other good things.

How To Subscribe.

These magazines are for sale by all Booksellers, Newsdealers, or Post-Masters, or they will be sent by us at following prices. SCRIBNER'S MONTHLY, \$4.00 a year, 35 cts. a number. St. NICHOLAS, \$3.00 a year, 25 cts. a number. Persons wishing to subscribe direct with the publishers, should write name, Post-Office, County, and State, in full, and send with remittance to SCRIBNER & Co., 743 Broadway, New York. All readers of this advertisement, not now subscribers, may, upon sending their subscriptions, deduct 10 cents to pay cost of check, P. O. Order, or Registered letter, and Send \$3.90 for SCRIBNER'S MONTHLY, or \$2.90 for St. NICHOLAS. We will send, as a specimen, a copy of SCRIBNER'S MONTHLY for February, 1878, for 15 cts., or St. NICHOLAS for Dec., 1877, for 10 cts., or both for 25 cts., which amount may be deducted if a yearly subscription is afterward sent.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 408.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.50 per volume.

Husk or Hoose in Calves.—**G. Silleck.** An emaciated condition, accompanied with a cough, indicates the presence of parasitic worms in the throat of the calf. The disease is akin to the gapes in chickens and verminous bronchitis in lambs. The proper treatment is to give a table-spoonful of turpentine in a pint of milk, daily, for two days, to be repeated a week later. To cause the calves to breathe the much diluted fumes of burning sulphur, or the fine powder of dry-slaked caustic lime in the air of a close stable, is also recommended.

To Keep Milk Cans from Rusting.—"Silleck." The more tin cans are scoured the more they will rust, as the thin coating of tin is thus worn off, and the iron under it exposed. To prevent rusting, paint outside with Asphalt varnish or some mineral paint.

Cerebro-Spinal Fever.—"O. T. R.," Montgomery Co., Kas. The symptoms of Epizootic Spinal Fever are: loss of appetite, with dullness and drooping head, followed by trembling and unsteadiness, caused by partial paralysis, and finally, inability to rise when down. The disease is frequently fatal. The treatment so varies according to the symptoms and the violence of the attack, that no general directions can be given. There being no gall bladder in the horse or mule, its absence is no sign of disease. Spinal fever shows itself on post mortem examination in changes in the spinal marrow, its covering membrane, and of the brain.

Parasitic Skin Disease.—"J. M. E.," South America, Ill. The skin of the horse is sometimes infested with one or more parasitic insects, the effect of which is to cause loss of hair, thickening of the cuticle, irritation and accumulation of crusts which sometimes break and discharge. The remedy is to wash the skin with warm soap-suds, break up the crusts, and apply thoroughly with a brush a mixture of 1 lb. each of soap and alcohol, and half a pound each of pine tar and sulphur. A mixture of 20 oz. of whale oil, and 1 ounce of carbolic acid, is fatal to the parasites; but is it sometimes injurious to the horse as well.

Scarifier for an Old Meadow.—"R.," Richmond, Va. An effective scarifier to break up a tough, "bound out" sod, would be one of the revolving disc harrows. If the sod is hard to penetrate, the harrow may be loaded with stone, and drawn by four horses.

How to Feed a Calf.—"W. G. H.," Rock Co., Wis. The following method has proved satisfactory to the writer: Let it suck for five days; then separate it from the cow and teach it to drink. Give it one quart of fresh milk at each milking time, and a quart of warmed sweet milk at intervals of three hours. After a week of this, gradually increase the supply until at a month old it is getting 8 quarts a day. After the calf is two months old it may have 10 quarts a day in four meals; and between these half a pint of dry mixed bran and oats, finely ground. The meal may be gradually increased to a pint a day. A little cut hay mixed with the meal may be given at four months old; then some corn-meal may be added.

Sheep Peeling Trees.—"A. H. D.," St. Louis Co., Mo. To preserve trees from being barked by sheep, wash them with a mixture of cow dung and clay or clayey loam; soot will increase its "keep off" qualities.

Pea Fowls and Guinea Pigs.—"T. W. S.," Spencer, Mass. A pair of pea fowls will cost from \$10 to \$30, according to the quality. Their eggs are usually hatched under a turkey. Guinea pigs are pretty pets, but of no practical use. A dry box is the best pen for them.

Deerfoot Farm, Southboro, Mass., is becoming one of the famous farms of the country. Deerfoot Farm pork is an esteemed delicacy on many hotel and private tables, and its 10,000 lbs. of butter finds a ready sale at high prices. How success has been obtained in these specialties, Mr. Edward Burnett, the proprietor, proposes to let the farmers learn for themselves, by holding a "Field Day" on Nov. 6th (previously announced for Oct. 25th), to which farmers generally are invited. After an inspection of the farm, the Town Hall will be thrown open to visitors, and opportunity given for a discussion of the things observed, under the auspices of the Southboro Farmers' Club. Such "Field Days" combine the features of a fair and farmers' club, and doubtless each one of the large number who will accept the invitation will receive a full return for the time and expense.

32-Rowed Corn is inquired for by several of our readers. Those having it for sale, should advertise it.

The International Dairy Fair, in N. Y. City, commencing Dec. 2d, at the American Institute, (instead of at Gilmore's Garden, as previously announced,) is being organized rapidly, and promises to be a real success. Subscriptions to the fund for expenses and premiums are being received in encouraging amounts from merchants, transportation companies, etc., and firms and private individuals are offering large special prizes, some of which were announced last month. The latest is a "sweepstakes premium," offered by H. K. & F. B. Thurber & Co. of New York, "of \$250 for the best package of butter (not less than 50 lbs.) salted with Higgins' Enreka Salt. This is open for competition to any farmer, dairyman, or creamery in the United States."

Waste of Manure.—"J. G." Adams Co., Pa. "Barn-yard manure spread on the surface and exposed for eight or ten days before plowing under," must lose somewhat in value, as decomposition is very rapid under the influence of air and moisture, which will result in the formation and exhalation of ammonia. Cold weather checks decomposition, but there will be more or less of it going on in the manure at any time when not frozen. If mixed with earth by plowing or harrowing in, or kept in heaps covered with earth, there is no risk of loss.

Kids.—In answer to "W. H.," Mr. "L. M. R.," of Orrville, Ala., writes that kids are born in pairs, sometimes three at a birth. He owns "a goat not yet two years old that is mother and grandmother of eight, seven now living. The increase of goats is more than double that of sheep. Goats are taxed in Alabama as a nuisance."

Lombardy Poplars for Lightning-rods.—Professor Asa Gray sends us the following note: The reason which lies at the bottom of the general belief, on the Continent of Europe, that lightning strikes the Lombardy poplar trees in preference to others, is coming to light. Green herbage, and green wood—sappy wood—are excellent conductors of electricity. A tree is shattered by lightning only when the discharge reaches the naked trunk or naked branches, which are poorer conductors. An old-fashioned Lombardy poplar, by its height, by its complete covering of twigs and small branches, and their foliage, down almost to the ground, and by its sappy wood, makes a capital lightning-rod, and a cheap one. Happily no one can patent it, and bring it round in a wagon, and insist upon trying it on. To make it surer, the tree should stand in moist ground, or near water; for wet ground is a good conductor, and dry soil a poor one. It is recommended to plant a Lombardy Poplar near the house, and another close to the barn. If the ground is dry, the nearer the well the better—except for the nuisance of the roots that will get into it.

The Best "Cure" for Choked Cattle is an "ounce of prevention" in the shape of a root-cutter, through which all roots, apples, etc., shall be run before being fed to the animals. The price of such a machine is much less than the value of a single cow. Many farmers have lost several animals from choking during the years which a good root cutter would last.

Italy's Agricultural Products.—The Statistical Volume issued by the Minister of the Interior this year, gives the following figures: Population, 28,030,030. Acres of Wheat, 10,000,000; product, 136,000,000 bushels. Corn, 4,000,000 acres; product, 80,000,000 bushels. In Grapes, 4,000,000 acres; Wine produced, 27,000,000 hectolitres (713,286,000 gallons); Olives, 2,000,000 acres; Olive Oil produced, 3,300,000 hectolitres (\$7,179,400 gallons). Silk grown, about 4,500,000 lbs.; but so much rough silk is imported and manufactured that Italy exports over 5,000,000 lbs. of manufactured silk. About 20,000,000 lbs. of Wool are grown, and about 15,000,000 lbs. imported to manufacture, employing over fifty thousand persons. Flax and Hemp are largely grown, and manufactured by the poorer women everywhere. Military conscription absorbs about 100,000 able-bodied

young men every year, each of whom serves three years in the regular Army; then on leave of absence 5 years; then gives partial service in the reserves 4 years, and in the Militia 7 years—in other words, is liable to be in or called into active service at any time during 19 years. Thus 500,000 men are constantly in the regular Army—quite a deduction from the number of producers, as compared with our own country, where less than 25,000 men are in regular military service, or one to twenty as compared with Italy. In some other European countries, the proportion is much larger than it is in Italy.

Milk in Sealed Glass Jars, after the "Arcy Farm" method, described on page 413, has been sold in New York for some time. The price is 20 cents per quart jar, and as it insures just as pure milk as the cow can give; the plan suits wealthy customers very well, while it is said to be quite remunerative to the farm supplying it. The glass jars, or any nice packages, not only are an assurance of the purity of the contents, but when such pains are taken in the marketing, the buyer may be reasonably sure of good feed, proper care, and neatness at the farm. Such efforts always pay, under proper management in production and marketing.

White Fuchsias.—"H. P.," Ionia, Mich. There are varieties of Fuchsia with white calyx and colored corolla, and *vice versa*, but we do not recollect to have seen any that were quite white throughout.

Loss of Cow's Tail.—"J. B. A.," Providence, R. I. Cows lose the end of their tails from accidents, such as other cows stepping upon them when lying in the stalls, bites of dogs, gangrene, caused by purulent disease resulting from the poisoning of injured parts by filth. There is no remedy for the loss; the switch never grows again, and the tail remains a "stump tail" through life.

Beware!!—Stock Speculation.—We are constantly receiving letters from subscribers, far and near, especially the far off ones, inquiring if this, that, or the other "banking house" or "stock dealer," or "broker" is reliable; if such or such a scheme is not worth a little trial, etc. We say most emphatically, let all stock speculators severely alone. If you have money for which you have no fitter use, present or future, and which you must throw away in gambling, or some other foolish manner, you may turn it to the acquisition of useful, though unsatisfactory experience, by sending it to some winsome, smooth-talking, unknown, irresponsible operator in stocks for others, to be invested (if not pocketed) in "puts," "calls," "options," "straddles," "double privileges," "combinations," etc., etc. It is very easy to put on paper brilliant schemes, demonstrating very positively that you can't lose, but must win. Now and then, not often, an investor is allowed to make a small "strike," just as a bait to others, or to have a brilliant example to refer to. Half a million or more circulars are sent out at a time to as many individuals, informing each one that he is the one selected for such an example. They are sent by shrewd writers possessing the knack of making others believe that they have special advantages for securing "points" in stock operations, the advantage of which they will be most happy to share with others (for a small commission!). Of course they are too rich, or too generous, to want to enjoy themselves all the benefit of their superior facilities for knowing what stock will rise, and what will fall.—A regular Stock Board is useful for the selling and purchasing of good stocks and bonds, as investments, and there are reputable, long-established firms who buy and sell on commission. But there are also numerous "bucket-shops," and irresponsible "bankers" and "brokers" where the chief capital is "assurance," and the ability to write advertisements and circulars of a taking character. So much for the present. If necessary, we will hereafter give a chapter of details on the way things are done in Wall street, Broad street, Exchange street, etc. In the meantime, to any reader who must invest a dollar or two, or a hundred of them in N. Y. stock speculation of any kind, we say, better put it into some organized, honest lottery (if you can find one); or into a horse race, or boat race, where you are sure the horse or boat that ought to win, and is expected to win, is not privately "sold out" after the bets are made (if you can find such an one!).

A New Rotation.—"F. J. G." In any rotation that would be an improvement upon the usual one, a root crop should have a place, and an extra clover crop, or two, if possible. Thus, beginning with wheat seeded to grass and clover, we may take one year, hay; one year, pasture; then corn, followed by roots—mangels preferred; then oats with clover; then clover-hay, and the aftermath plowed down for wheat, which brings us to the beginning again. This would make a seven years' rotation. The two cultivated crops with the clover would clean and enrich the land, and there would be more fodder grown to the acre than in two of our present four year rotations.

Nuts and Nubbins.

Josh Billings says that he goes to the White Hills by the best route in the world, and catches the best-route in the world after he gets there.

A young mother gives her child a stick of candy, and, to teach it politeness, says: "What do children say when they get candy?"—"More!"

A little Florida boy tamed an alligator, and the ngly reptile learned to like the little fellow—not, however, until the little fellow was all gone.

"Fine nainsook, embroidered, makes lovely little slips for children," says a fashion writer. Orange peel on a sidewalk continues to be good enough for men.

"Say, papa, did mamma ever believe that some folks would be lost?"—"Yes, she did," replied the father. "Then what did she suppose would become of you?"

The same backache which makes a boy howl when he's digging potatoes, causes him to smile when he slips off the back way to the picnic. Boys are curious insects.

"We all knows," said a cockney school-committeeman to a teacher he was examining, "that A, B, and C, is vowels; but what we wants to know is, vy they is so."

At a Parisian hotel during the Exposition:—Maddened Guest—"Sixteen francs for a candle!"—Courteous Host—"No, sir; one franc for the candle; fifteen francs for the candlestick, milord."

"What is the national air of this country?" asked a foreigner in Washington. "That's the national air," replied a native, pointing to the Capitol, "but the animals are all out in the jungle just now, chasing voters."

Tourist (to fair companion)—How quiet and lovely! Surely this might be a spot the poet had in mind when he said, "Silence reigns." Guide—Ah, and ye may say that same; and thunders, too, yer honor.

We met a farmer, a day or two ago, who was so hard pushed that he was on his way to pawn his hoe. We told him we were sorry to see his case so hopeless.—"Hopeless!" he exclaimed, "far from it! You know the old motto, 'hoe-pawn, hope ever!'"

Annie—"Can you tell me, ma, why the perfume on the handkerchief of my dear Augustus is like me shooting an arrow at a target?"—Ma—"No, my dear, I don't see the similarity; why is it?"—Annie—"Because it's aro, ma, scent from my beau." Ma faints.

Said Brown to Parker: "I say, Parker, what's the difference between a ripe watermelon and a decayed head of cabbage?"—"Give it up; can't tell."—Brown laughed softly as he said, "You'd be a nice man to send to buy a watermelon, you would!"

When little Thomas stoops to toy with herries, jam, and jelly cake, no art can soothe the chastened boy—no nostrums ease his stomach ache. And if the gripping pains defy the medicines prescribed to foil, his parents will do well to try the limpid, liquid castor oil.

"What is a junction, nurse?" asked a seven-year-old fairy the other day of an elderly lady who stood at her side on a railway platform. "A junction, my dear," answered the nurse, with the air of a very superior person, indeed, "why, it's a place where two roads separate."

The young man had been giving his views about everything to everybody for an unendurable half-hour, when the old man said, with nice courtesy, "I beg your pardon, sir, but if you begin teaching everybody at eighteen, when do you intend to begin learning?"

A mature lady was making herself conspicuous at the opera by talking loudly to two young men accompanying her.—"What a bad example that woman is giving her sons," said in a stage whisper a spectator in an adjoining box. No further disturbance from that source.

A recent advertisement contains the following: "If the gentleman who keeps the shoe store with a red head will return the umbrella of a young lady with whalebone ribs and an iron handle to the slate-roofed grocer's shop, he will hear of something to his advantage, as the same is the gift of a deceased mother now no more with the name engraved upon it."

"A wasps' nest contains fifteen thousand cells," and the greatest of these "cells" is to sit down on the nest under the mistaken impression that all the wasps have gone to the seaside or somewhere on a visit. A single wasp loafing in the back kitchen, will give the sinner a warm reception. And no doubt a married one would treat him in the same manner.

A young lady recently inquired at a store in New York for "Louis Quinze" shoes. Some were shown her by a spruce clerk, but, not liking a peculiarity about the heels, she asked if they had none without it. "Oh, no," said the clerk, "Mr. Quinze always makes them just like this."—"Mr. Who?"—"Mr. Quinze—Louis Quinze—of Parée—he makes all our goods of this class—we have them direct from him. You can see his trademark!" The customer survived to tell the story.

Handy to Have is "Wyckoff's Combination Rule," which unites a variety of conveniences in one small implement. It is at once a ruler and a rule, has graduated arcs for drawing angles, makes circles with great accuracy, and may be readily converted into a balance for weighing letters; a very ingenious and useful affair.

Poland China Swine.—At first this breed was a "mixed lot," but having qualities which commended them to the farmers of the great pork-producing States, they have, by a course of careful selection and breeding with a definite object in view, become well established, with characters apparently as well fixed as those of older breeds. Prominent in bringing about this result, are the D. M. Magie Co., Oxford, O., who have long found the advertising columns of the *American Agriculturist* an excellent medium for making their wares known. The fame of these swine has reached other countries, and we not long ago announced a shipment of them by the Magie Co., to England. We now learn that six of the animals are on the way to some of our wide-awake friends in Australia, and we hope to hear of their safe arrival. The Poland Chinas have made an excellent showing at the fairs this fall, and have carried off many prizes. We are all the more pleased to record the success of this breed, from the fact that it is American.

Seed Potatoes for the South.—A correspondent who sends seed potatoes largely to the Southern States, informs us that many are lost when sent in the spring by being frozen on the way, and suggests that the many readers of the *American Agriculturist* who send North every year for their seed potatoes, will consult their own interests if they order in the fall instead of delaying it until near their planting time, which occurs long before cold weather is over with us in the North.

Seedling Peaches.—Every year, several specimens of seedling peaches are brought to us, some of them of real excellence, though the majority, while large, are coarse-grained, lacking in sweetness, and very late. Some very fine seedlings were grown by Mr. Thos. B. Briggs, in 73d St., New York City, one of which was regarded of sufficient merit to receive an award at the late exhibition of the N. Y. Horticultural Society.

A Handy Household Implement is Hunter's "Rotary Flour and Meal Sifter." It is a scoop with a wire gauze bottom within which are rotating wires turned by a crank at the end of the handle. It is one of those practical, convenient things that recommend themselves at first trial; is used as a general sifter or strainer.

Disease in Hogs.—"M. T. T.," Parksville, Tenn. Anthrax fever in swine results in black spots in parts of the body and on the mucous membranes, often about the eyes and mouth. These ulcerate, or become open sores, which suppurate. The eyes are sometimes sloughed away, and entirely lost. The cause may be, and probably is, malarial; the blood is poisoned, and the disease is often rapidly fatal. The proper treatment is, to give medicines which shall act on the bowels and kidneys freely, in order to remove the poison, and then to give tonics. More particular directions cannot be given without knowing the facts of the case in question.

Treatment for Curb.—"M. F. C.," Portage Co., Ohio. The treatment for "curb" consists in the use of a high-heeled shoe, to relieve the tension of the tendon and ligament of the hock, and the use of cooling lotions. A solution of one ounce of saltpetre in a pint of water may be useful. After the inflammation is removed, a blister is usually applied. In bad cases, and when the trouble is hereditary from bad breeding, no permanent cure can be effected.

"Model Homes," By Palliser, Palliser & Co., Architects, Bridgeport, Conn. This is a collection of designs for dwellings of various sizes and costs, barns, school-houses, village churches, etc., most of which have been already erected. We are glad to notice one peculiarity of the designs; there is no attempt to hide the roof, but this, the most expressive portion of the building, has everywhere the importance and dignity that belongs to it. The designs and plans, plainly engraved, are accompanied by descriptions which give instructive hints. Sent by the Orange Judd Company, post-paid, for \$1.00.

Oats for Milk.—"W. K.," Kanawha, W. Va. Sheaf-oats cut up, make a very poor feed for milking cows, unless in connection with other feed. It would be better to thrash and grind the grain, and feed it with wheat-bran and corn-meal, and cut straw and hay.

"Lessons in Cookery."—Hand-Book of the National Training School for Cookery (South Kensington), London. Edited by Eliza A. Youmans, and published by D. Appleton & Co. This is, to us, a very interesting

book, in showing the course of instruction in the great English school. It starts with the supposition that the pupil knows nothing whatever. It does not exactly say, "To peel potatoes: (1.) Take some potatoes; (2.) Take a knife; (3.) Take the potato up in your left hand; (4.) Take the knife in the right"—but its directions are quite as minute, and appear to leave no possible chance for a mistake. At all events, the recipes seem to be excellent, and we welcome this as a useful addition to our kitchen literature. Sent from this office for \$1.50.

Seed Sower.—"A. P.," Madalin, O. The Calhoun Broadcast Seed Sower is a useful machine, easy to manage and economical of labor. It is used by a large number of persons in every section of the country. The manufacturers are the "Goodell Manuf'g Co.," Autrim, N. H., or it can be had by getting up a club for the *American Agriculturist*. See Premium List, pages 439-448.

Effects of Old Age.—"H. B.," Trumbull Co., Ohio. When a horse is 20 years old, he may be expected to show the effects of old age. These frequently appear in weakness of the bladder, and incontinence of urine, as well as in weakness of the loins; due often to partial failure of the nervous system proceeding from the spinal cord. Relief may perhaps be found in applying mustard to the loins, or between the thighs below the tail. Two grains of cantharides may be given once a day, for a few days. Do not expect permanent relief in so old a horse.

Inflammation of the Udder.—"G. N. S.," Pike Co., Pa. Inflammation of the udder is manifested either by bloody milk or by a hot swollen condition, without any milk, or with but little, and that clotted and stringy. In a recent case in the writer's herd, the treatment was to foment the udder with warm water for 15 minutes; and then to rub well into the skin, a tea-spoonful of a mixture of 7 parts of glycerine with one part of iodide of potassium. This, with frequent milking, removed the trouble in a few days, and left no ill effects.

Disease in the Feet of Sheep.—"J. W. D.," Texas. Foot rot in sheep presents different appearances under different circumstances. Sometimes it appears as granular, inflamed, and very tender growths beneath the sole; when the diseased sole sloughs off, these project beyond the horn, and cause lameness. There is then no ulceration or fetid discharge, but the sores may appear afterwards. The proper treatment is to use a mild caustic, such as sulphate of copper (blue vitriol). Make a salve by thoroughly mixing one pound of finely powdered sulphate, and four pounds of lard; apply this to the feet freely, after having washed them clean. If possible, a piece of cloth should be tied around the foot, to prevent the salve from being rubbed off, and thus delay the cure.

Indigestion in a Cow.—"F. J. G.," Almont, Mich. When a cow suffers from indigestion, the mass of food in the panceh ferments and produces gas, which causes "bloat." In some cases this passes off in a few hours; otherwise the cow dies of suffocation from pressure upon the lungs. A remedy, is to place a billet of wood between the open jaws, and tie it fast to the horns. In her efforts to get rid of this, the cow voids the gas and is relieved. When the trouble is frequent or regular, medicine is needed. Give a pint of linseed oil, and after it, half an ounce of ground ginger, and half an ounce of carbonate of soda; this is to be mixed with the food.

Paralysis in Pigs.—"B. C.," Eden, Ohio. When pigs are paralyzed in their hind quarters, a disease of the spinal cord prevents action of the nerves which proceed from that center, and causes loss of muscular power. As the nerves of the digestive organs proceed from the spinal cord, digestion fails, and the appetite is lost. If it does not recover, the pig dies of starvation and inanition. The remedy is to apply mustard to the loins, and to give half an ounce of saltpetre or turpentine, to cause action of the kidneys. This disease is caused by exposure to damp, cold, and filth. One cold rain, after the pigs have been turned out to pasture, has been known to bring it on.

Store Butter.—"J. P. D.," W. Va. There is no book on dairying that we know of which treats specially on management of butter received at country stores. This comes in a variety of kinds, colors, and qualities, and needs the most careful mixing to present a decent appearance. The "Rotary Butter Worker," illustrated in the *American Agriculturist* of August, 1877, would be useful for the mixing of such butter. When butter is melted, it will not return to its former condition, it loses its granular character. In re-working butter it is a good plan to put it into cold, salt water, and slice it down thinly, to get rid of the butter-milk and other impurities; then work it over, using cold water freely in the working. Then salt it sufficiently, work once more, and pack in firkins in layers of two or three inches. The grain will,

of course, be lost to some extent, but it is impossible to make common butter into a first class article by any process whatever. It can only be made passably good.

Purulent Ophthalmia.—"J. R. D.," Ellsworth, Kas. This disease in cattle is very similar to that in mankind. It is contagious, the virus being conveyed by contact. It usually spreads through a herd for the reason that the discharge from the eye is conveyed by litter or from rubbing posts or other places, from one animal to another. It is a disease of the blood, and a pregnant animal communicates it to the fetus, in which it appears at birth or becomes constitutional, appearing perhaps years after. The usual treatment is to bleed the eye by cutting the skin and veins at the inflamed lower corner of the organ, and bathing the part with warm water to induce bleeding freely. The feed should be cooling and laxative; half-ounce doses of sulphate of soda should be given daily for a week or two, mixed well with the food, and the eye washed with a lotion of one grain of sulphate of copper to one ounce of water.

Milk-room with Ice.—"B. W.," Lake Co., Ind. There are some reasons why it is best to have a milk-room quite free and separate from an ice-house. An ice-house is damp, and mould gathers about it. The packing around the ice slowly decomposes, and gives off an odor, which is communicated to the milk. The ice is either consumed wastefully, or else it does not reduce the temperature in proportion to the consumption. After some experience, the writer prefers a well-constructed milk-house, if possible with a stream of pure spring water passing through it in pipes, or in a convenient tank, and nothing else beyond the usual dairy appliances.



J. ESTEY & CO.
BRATTLEBORO, VT.

Send for Illustrated Catalogue.

The unsolicited testimony of the most careful judges the world over, are unanimous in their praises of the ESTEY ORGAN.

BIG PAY.—With Stenell Outfits. What costs 4 cts. sells rapidly for 50 cts. Catalogue free.
S. M. SPENCER, 112 Washington St., Boston, Mass.

\$1.50—PRICE REDUCED.—\$1.50
THE NURSERY,

A Monthly Magazine for Youngest Readers. Subscribe now, and get the last two numbers of this year FREE. Send 10 cents for a specimen. JOHN L. SHOLEY, 36 Bromfield Street, Boston, Mass.

N. GUILBERT,
Evergreen Farm, Gwynedd, Pa.,
Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, best varieties of Geese (tame and wild), Ducks, Turkeys, Chickens, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Song Birds of all kinds, and Shetland Ponies. Fine Miled Cows always on hand. Newfoundland Pups for sale. Deer, and Swan wanted.

REGALIN PRESERVING POWDER,
FOR EGGS, BUTTER, FRESH OR SALTED MEAT, Etc.

Perfectly tasteless, and preserves the color. Keeps the brine clear, free from scum, and brine and meat from souring. So salted, it is in taste and flavor much sweeter than ordinary. Price 50 cts. per Box. Sent by mail to any address, postage prepaid. Agents wanted.

C. AM ENDE, Hoboken, N. J.

HOW TO HUNT AND TRAP.

By JOSEPH H. BATTY.

A new and comprehensive Sportsman's Guide for Hunting, Trapping, etc., including Wild Sports of the Wilderness, Mountain Shooting, Bear Hunting and Trapping, Suggestions on Traps, etc. Fully illustrated with hunting scenes from sketches by the author. It treats also on Camping, the use of Mules and Horses, Dogs, Guns, Boats, Canoes, etc.

PRICE, POST-PAID, \$1.50.

ORANGE JUDD CO.,
245 Broadway, N. Y.

An "A. 1" REVOLVER FOR \$2.50.

THE ALEXIS.

With Russian Model Stock, full nickel silver plate, and hand engraved, 7 shot; uses the extra long Rifle cartridge, and will kill at 100 yards.

These Revolvers cost over \$6 apiece to make, and it is the greatest bargain ever offered in this country. They are equal to a Colt's Vesson in every particular, and superior in some. The barrel is octagonal and extremely long, and rifled deeply its entire length. The new model handle gives a firm grip and prevents throwing up. **All parts are interchangeable and readily duplicated at any time.** It is the most beautiful and accurate Revolver that has yet been made; elegantly shaped and designed, and made by the best workmen in the United States, and for self-defense is unequalled. **Perfect satisfaction guaranteed or money cheerfully refunded.** It can be had for \$3 anywhere, and is cheap at that price. We will send it C. O. D., with privilege of examining at express office, to any point east of Iowa, on receipt of \$1, which will be deducted from the bill; or on receipt of cash in full will give you a box of long range cartridges, or will send by mail for 20 cents extra. Cleaning brush and rod go with every one in a nice box. **Prices:** Ebony stock, \$2.50; engraved Rubber stock, \$3; Ivory stock, \$3.75; and Pearl stock, \$4.50. This is the biggest and most extraordinary bargain we ever have or shall offer. Remember your money returned if it is not exactly as we state. This Revolver is all English steel, no cast-iron. The country is flooded with cheap, worthless Pistols. Buy a good one while you are about it. Orders filled promptly. **Bay State Arms Co., 33 WATER STREET, Boston, Mass.** This is just the weapon for Bankers and Police, self-defense, and target practice.

An advertisement of the above Revolver appeared in the October number of the American Agriculturist, and we could nearly fill this page with the names and testimonials of purchasers. Every one is more than delighted. We take the liberty of herewith mentioning the names of a very few of the hundreds of Agriculturist readers who have bought, some of whom you may know:—B. C. Merritt, Little Geneva, N. Y.; G. H. Hale, Weston, Ill.; A. N. Williams, South Manchester, Conn.; J. F. Warner, Moscow, Penn.; F. A. Strong, Erie, Pa.; Samuel C. West, Pittston, Pa.; Geo. M. Wentworth, Hittfield, Mass.; W. F. Locke, Ottawa, Ill.; S. L. Randall, Springfield, Mass.; Chas. B. Case, Avon, Conn.; W. A. Nolan, Wadesville, Va.; Eli Conrad, So. Gibson, Pa.; W. Pearce, Marietta, O.; B. F. Niles, Emden, Ill.; W. A. Norton, Brownsville, O.; Wm. Shively, Atwater, O.; I. W. Ireland, Eckley, Penn.; G. W. Perry, Amboy, Ill.; A. L. Sellers, West Chester, Pa.; E. A. Brown, Ridgeville, Ontario, Can. Dozens more could be added. "The proof of the pudding is in the eating." Our references are purchasers themselves. The following notice appeared in the Saturday Evening Post, October 5, 1878, direct from the editor's pen, and more than substantiates any statement we make regarding this remarkable and unequalled bargain. We have examined the Alexis Revolver, advertised in another column, and take pleasure in recommending it to our readers. No written description can do it justice. It is all and more than its enterprising manufacturers claim for it.—Editor Post.

Cheapest Toy Lantern to Best Stereopticon.

MAGIC LANTERN
60 VIEWS \$25.

CATALOGUE FREE! OUTFITS WANTED!
Great Needham THEO. J. HARBACH,
Musical Marvel, 809 Filbert St., Philada., Pa.

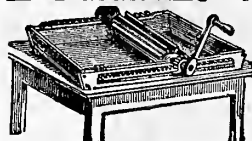
A GOOD STEM WINDING WATCH!

This is the biggest bargain ever offered in Watches in this country. They all have fine English nickel works, heavy bevelled-edge pebble crystal front, and the cases are genuine Allanoide, which has just taken the first prize as the nearest and best imitation of GENUINE GOLD; in fact, this Watch exactly resembles a \$100 Gold Watch. It is a Stem Winder (no key to carry around and lose); it is guaranteed a first class and accurate time-keeper, and would be cheap at \$15. Our price is \$6.50 by express, or \$6.75 by registered mail. For sportsmen who do not wish to carry their expensive Watch on gunning trips, this is specially adapted, and the difference would never be detected. No. 2 is a similar Watch to above, key winder, sunk second, full hunter's case, and genuine full jewelled American works, same as in a fine gold or silver Watch, and is an exact counterpart of a \$150 Gold Watch. Price, \$8; by registered mail, \$8.25. No. 4 is the same in SOLID COIN SILVER cases, ELEGANTLY ENGRAVED, and as good as any \$25 watch in America. Price, \$11; by registered mail, \$11.25. The above Watches are guaranteed by us in every respect. They were taken by us in exchange for other goods, and are offered for the next 60 days to close them out at lower prices than were ever quoted on similar goods. Satisfaction guaranteed. Bay State Arms Co., DEALERS IN FIRE ARMS, SPORTING GOODS, &c., 93 Water St., Boston, Mass.

Patent Concave Ox-Shoes.
The only forced ox-shoe made with concavity to fit hoof, and the best and cheapest.
GREENFIELD TOOL CO., Greenfield, Mass.

CIDER, GRAPE JUICE, PRESERVES
Are kept Sweet by PRESERVING FLUID.
W. ZINSSER & CO., 197 William St., N. Y.
Send for Circulars giving particulars.

BUTTER WORKER.



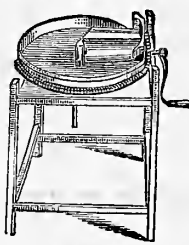
The most effective, simple and convenient yet invented. Works 30 lbs. in less than 5 minutes, thoroughly working out buttermilk and mixing the salt. **AGENTS WANTED.** Send for circular.

A. H. REID,
6 N. Eighteenth St., Philadelphia Pa.

THE LILY BUTTER-WORKER

We guarantee it the best and cheapest Machine in the world. No hard labor. Mixes the salt thoroughly, and takes all the milk out, with five to ten minutes' work. Circulars sent on application.

C. H. R. TRIEBELS,
Successor to Henderson & Co.,
316 Race St., Phila., Pa.



The LANCASTER BUTTER CARRIER,

with a cup for each print, will deliver print butter to market in perfect shape. Also carriers without cups, for square or oblong prints. Prices low.

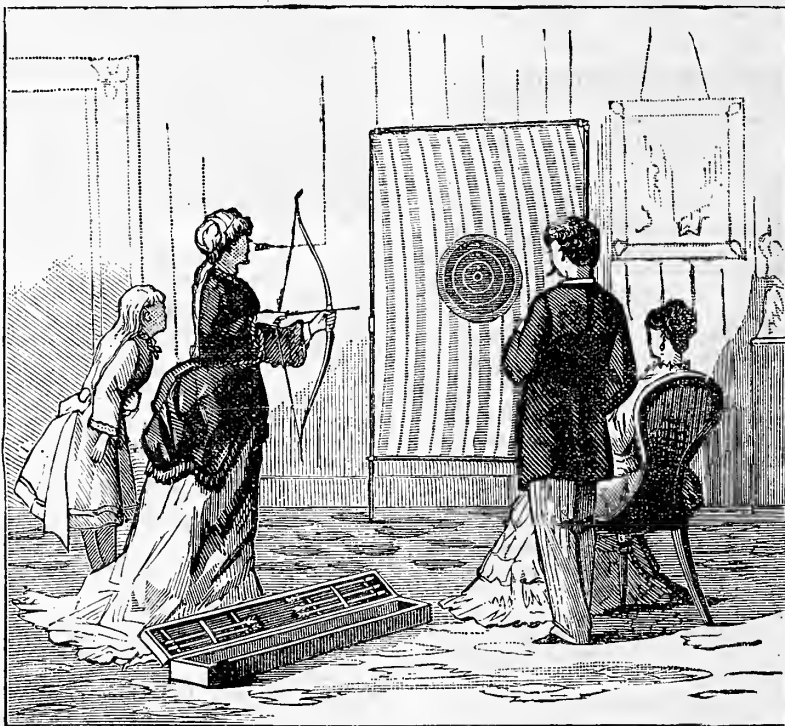
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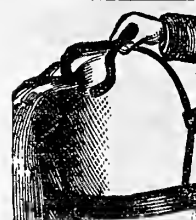
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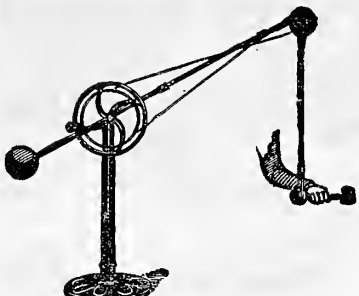
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Explanatory Notes.

Read and Carefully Note the following Items: The Table on this page tells the name and cash price of each article, and (in last column but one), gives the number of names sent in at the regular price of \$1.50 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for four names, that is \$1.25 each. Some persons quickly raise large clubs by taking all the names at \$1.25 each, or less, and themselves pay the difference, and even thus get the premium articles very cheaply.) (a) All subscribers sent by one person count, though from several different Post-offices. But... (b) Tell us with each name or list of names sent, that it is for a premium.... (c) Send the names as fast as obtained, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next June, to complete any list, but every premium desired will be sent as soon as earned and ordered.... (d) Send the exact money with each list of names, so that there may be no confusion of money accounts.... (e) Old and new subscribers all count in premium clubs, but a portion at least should be new names; it is partly to get these that we offer premiums to canvassers.... (f) One or two Specimen Numbers, etc., will be supplied free, as needed by canvassers, (when 3 cents per copy is furnished to pay for mailing), but extra numbers are expensive, and should be used carefully and economically, and where they will tell. Other specimen numbers will be sent, post-paid, to canvassers only, for 10 cents each. The price to others is 15 cents.... (g) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways will be safe against loss.

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7	Gold Pen, Telescopic Case (do. do.).....	\$2 50	5 9
8	Gold Pen and Pencil, (comb'd) (do. do.).....	\$5 50	9 17
9	Little Girl's Wash Set, (C. W. F. Dare).....	\$5 75	2 4
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11	Go-Bang, (do.).....	\$1 25	4 7
12	Sliced Objects, (do.).....	\$1 25	4 7
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38	Pocket Knife (do. do.).....	\$2 75	5 9
39	Pocket Knife (do. do.).....	\$2 00	4 8
40	Ladies' Pocket Knife (do. do.).....	\$2 00	4 8
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58	Family Cherry Stoner (do.).....	\$1 00	3 5
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70	Cake Basket (do. do.).....	\$10 00	15 28
71	Casters (do. do.).....	\$5 25	8 16
72	Casters (do. do.).....	\$7 50	12 21
73	Casters (do. do.).....	\$10 50	15 29
74	Twelve Teaspoons (Meriden Cutlery Co.).....	\$7 25	11 20
75	Twelve Tablespoons (do.).....	\$14 50	19 37
76	Twelve Table Forks (do.).....	\$14 50	19 37
77	Child's Knife, Fork & Spoon (do.).....	\$3 00	6 10
78	French Cook's Knife, Fork, & Steel (do.).....	\$3 75	7 12
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104	Twenty-two Vols. 16 to 37.....	\$50 60	60 110
105	\$10 Library (your choice).....	\$10 00	15 28
106	\$15 Library do.....	\$15 00	20 39
107	\$20 Library do.....	\$20 00	26 48
108	A Choice of Good Books. (See Description, p. 448.).....	\$20 00	26 48
109	An Excellent Watch.....	\$10 00	16 30

The Premiums Nos. 4 to 8, 10 to 15, 17, 21, 22, 24, 26 to 29, 32, 33, 37 to 41, 48 to 51, 88, 89, 99, 101 to 108, inclusive, will each be delivered FREE of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. [OVER.]



No. 1.—Boy's Tool Chest.—Every Boy in the United States or elsewhere ought to have this; or better, No. 2; or better still, No. 3. No. 1 has 12 assorted tools, in a neat hinged-lid box, made of ash, with walnut moulding. Just the thing to encourage the mechanical genius in boys. Made by E. I. HORSMAN, 80 and 82 William St., New York City. Three subscribers at \$1.50 each will secure one free. [It will be sent for \$1.00 cash.] Receiver to pay expressage.

No. 2.—Boy's Tool Chest.—Larger than No. 1, and containing twenty-one tools. From same manufacturer. Only five subscribers at \$1.50 each will secure one free. [Or one will be forwarded on receipt of \$2.50 cash.] Receiver to pay expressage.

No. 3.—Boy's Tool Chest.—Still larger than No. 2 and from same maker. This contains thirty-two tools, and will be a fine present for any boy. Eight subscribers at \$1.50 each will secure it free. [It will be sent for \$5.00 cash.] Recipient to pay expressage.



No. 4.—Patent Magic Bell Head Pencil.—This is a very pretty and convenient gold-plated Pocket Pencil, which is extended or closed by pulling or pressing the head. This premium and the four which follow, are from the well known manufacturers, LUDDEN & DOW, 192 Broadway, corner of John St., New York. Mr. Ludden has been in the business 38 years, and we know and can highly commend his work. Only four subscribers sent us at \$1.50 a year secure one free, post-paid.—[We will send one, post-paid, for \$1.50.]

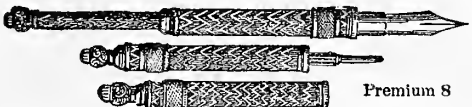
Nos. 5, 6.—Magic Charm Pencils.—These are gold-plated and very beautiful. We offer two kinds, the smaller, an exceedingly tasteful thing for ladies, and a larger style for gentlemen. Each style has



a ring at the head for attaching to a watch-chain. By same makers as No. 4. 4 to 5 subscribers will secure one free, post-paid. (See Table.)—[We send the ladies' size, post-paid, for \$2, and gentlemen's size for \$2.75.]

No. 7.—Gold Pen, Telescopic Case.—Gold-plated case containing No. 4 Diamond-pointed Gold Pen, warranted. Same makers as No. 4. Only 5 subscribers sent to us at \$1.50 each, will secure this splendid article free and post-paid. In sending for this pen indicate how you wish the pen—whether you desire it to be stiff, medium, or limber.—[We will send one of these fine Pens, post-paid, on receipt of \$2.50.]

No. 8.—Gold Pen and Pencil (Combined).—A very elegant premium. The handsome, heaviest gold-plated case contains a No. 7 Improved Telescopic Pen and Pencil. The pen slides out, the pencil is turned out by a screw, and there is a chamber for leads in top. By same makers as No. 4. This is richly worth



the little effort to collect 9 subscribers at \$1.50 each to secure it free.—[We will send one, post-paid, for \$5.50.]

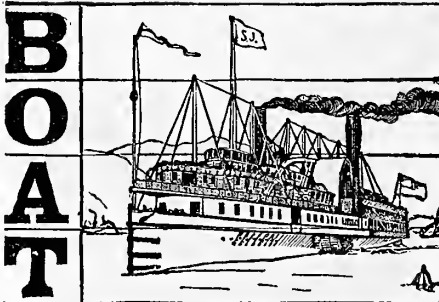
No. 9.—Little Girl's Wash Set.—Composed of six pieces, viz.: washboard, wringer, pail,

clothes-horse, scrub-brush, and brass-bound tub 10 inches in diameter. From same manufacturer as No. 16. Two subscribers at \$1.50 each will secure it free. [Or it will be sent for 75 cts. cash.] Receiver to pay expressage.

No. 10.—Parcheesi.—This game is designed so plainly and attractively that it is quickly comprehended by children, and also excites interest in the oldest players. It is bound in durable, handsome paper, with eight dice, sixteen brass-bound counters, and directions for playing. From E. G. SELCHOW & Co., 41 John St., New York. We send it free, and post-paid, for 4 subscribers at \$1.50 each; or will forward it prepaid, for \$1.62.

No. 11.—"Go-Bang."—The new East India parlor game. It is having a large sale, and is pronounced by many, the best parlor game of the day. Directions for playing it, accompany each one. From same firm as No. 10. Sent free, and post-paid, for 3 subscribers at \$1.50 each, or it will be forwarded post-paid, for \$1.20. [For 5 subscribers at \$1.50 each, we will send two sets free.]

SLICED OBJECTS



SLICED BIRDS SLICED ANIMALS

Nos. 12, 13, 14.—Sliced Objects; Sliced Birds; Sliced Animals.—These pleasing, dissected puzzles, or "sliced" objects, etc., are designed to attract and interest the little folks, as they invariably do, and at the same time help them in learning to spell. The engraving of a "Boat," shows how the objects, animals, etc., are divided into sections. They are very popular with the children, as they are got up in attractive style. From E. G. SELCHOW & Co. Any one of these three Premiums will be sent for only two subscribers at \$1.50 each, or one will be forwarded, post-paid, for 65c. Mention the one desired. All Three for 4 subscribers at \$1.50 each.

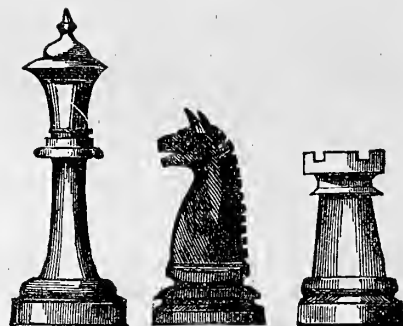
No. 15.—Vignette Authors.—This game consists of 72 cards, each card having a handsomely engraved portrait of an author, his name, and three of his works. The cards are finely ornamented with flowers, and are a new style. From E. G. SELCHOW & Co., 41 John St., New York. We send them, post-paid, for 2 subscribers at \$1.50 each; or we will forward them, pre-paid, for 60 cts.



No. 16.—Portable Writing Desk.—Always handy, especially for the young folks. Closed, it is a 13-inch square black walnut desk, with gilt ornaments. From C. W. F. DARE, 47 Cortlandt St., New York City. Three subscribers at \$1.50 each will secure this free. [We will send one for \$1.25 cash.] Receiver to pay expressage.

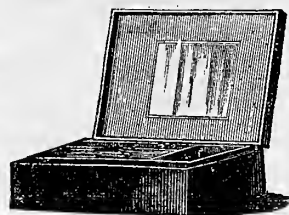


Premium 16—Opened.

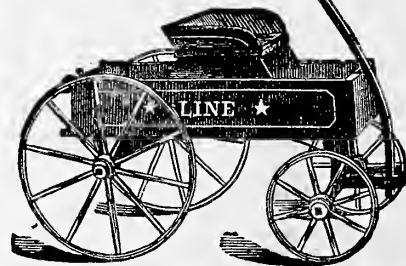


No. 17.—Chess-Men.—These are, of course, to be had at all prices, according to quality. The set we offer is neat and serviceable. The figures are of boxwood and ebony, with large bases to prevent their turning over. From same firm as No. 10. Sent prepaid for 6 subscribers at \$1.50 each; or forwarded, for \$3.20.

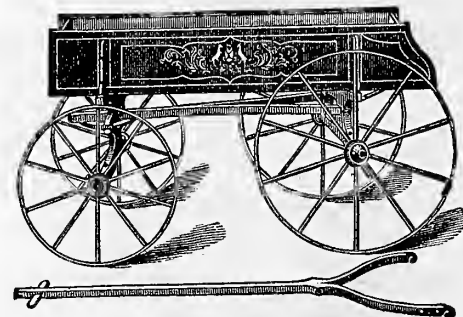
No. 18.—Walnut Work Box.—A pleasing gift for a young Miss. It is a 12-inch solid walnut Box, cushion, etc., inside velvet finish. From same manufacturer as No. 16. Three subscriptions at \$1.50 each will secure it free, [or it will be sent on receipt of the price, \$1.15.] Receiver to pay expressage.



No. 19.—Boy's Wagon.—Just the thing for the active little "drivers" at home. This Wagon has iron axle, and heavy round tire wheels, painted and ornamented with bright colors, has hnb caps and seat, with 28-inch body. From C. W. F. DARE, 47 Cortlandt St., New York. A



father, mother, or older brother or sister ought to easily collect the 8 subscribers which will get this free.—[Or we supply one for \$4.50.] Receiver to pay expressage.



No. 20.—"Our Boys' Wagon."—For the use of Boys from 6 to 15 years of age. The bed is 2 ft. 8 in. long, 1 foot 3 in. wide, and 5 in. deep. The wheels are all iron, the spindles also of iron. It is finely painted, a first-rate and handsome wagon, and will carry a weight of 400 to 500 lbs. on a level road. Made by the Silver & Deming Manuf'g Co., Salem, Ohio. 12 subscriptions, at \$1.50 each, will secure it, or we will supply one for \$8. The freight from the factory in either case to be paid by receiver.

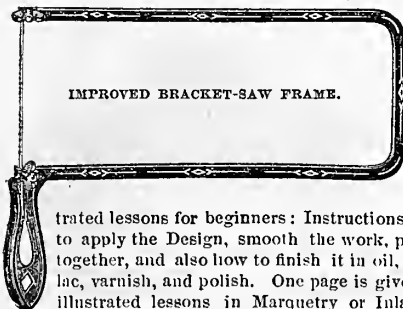
No. 21.—Improved Bracket-Saw Outfit.—(See engraving, top of next column.) The great pleasure and profit enjoyed by thousands of young readers in using the Bracket-saws, of which we have given many away in past seasons, assures the success of this Premium. The "Improved Outfit" consists of: 1 Beautiful Box; 1 Steel Saw Frame, Japanned and Finely Ornamented; 50 Bracket and Ornamental Designs; 1/2 Doz. Steel Saw

Blades; 1 Brad Awl; 1 Piece Sand Paper; 85 Miniature Designs, of full size, with a price list; 1 Manual of In-

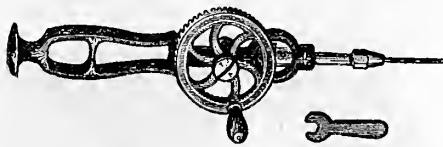


Premium 21

structions, 12 pages, Illustrated, giving description of all tools and woods used in Bracket Sawing; Five illus-

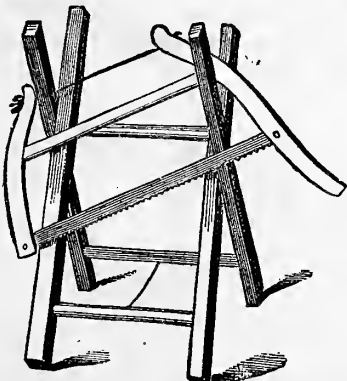


trated lessons for beginners: Instructions how to apply the Design, smooth the work, put it together, and also how to finish it in oil, shellac, varnish, and polish. One page is given to illustrated lessons in Marquetry or Inlaying work. For only 3 subscribers at \$1.50 each, we will send this free; or we will supply it, post-paid, for \$1.18.



No. 22.—Bracket-Saw Drill, No. 1.—A very useful little tool. The Drill Stock, and Six Drill Points, and Wrench, are packed in a box. For only Three subscribers at \$1.50 each, we will send the Drill, or we will supply it to any one, post-paid, for \$1.15.

No. 23.—Buck and Saw for Boys.



—Suitable for the little fellows from 4 to 8 years old, and it will please them. From same manufacturers as No.

16. Two subscriptions at \$1.50 each will secure it free. [Or it will be sent for 50 cts.] Receiver to pay expressage.

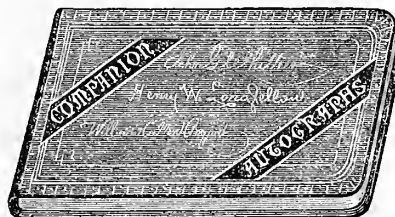
No. 24.—Eagle Soap Bubble Toy.

It would be hard to find the boy or girl who has never enjoyed "blowing soap bubbles." Here is a Toy invented to help the little folks in this operation, and it does it in a way to fill them with delight. It is claimed that 300 bubbles can be blown from one without refilling. Four of these toys will be given for this Premium, and almost any child can readily get 3 subscribers, at \$1.50 each, and thus secure one Toy for himself, and 3 others to give away; or we will send four of them on receipt of \$1. Directions accompany each one. E. W. Bliss, General Agent, 34 Barclay St., New York.



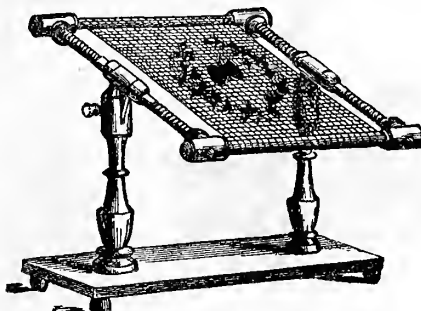
No. 25.—Citadelle—A Pleasing

Parlor Game.—Size of Board, 10x38 inches, with Balls, Cues, etc. Each player has five turns in securing the ball against the Citadel. The most accurate marksman will score the highest number of points and win the game. WARNER & Co., Northampton, Mass., are the makers. Three subscriptions at \$1.50 each, will secure this Game free; or we will forward one on receipt of \$1.00. Expressage to be paid in either case by Receiver.



No. 26.—Companion Autograph

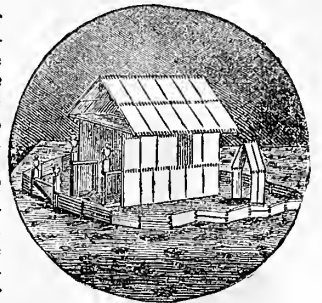
Album.—It has embossed gilt covers, round corners, and gilt edges. Fac-simile Autographs of Whittier, Longfellow, and Bryant, are embossed in gilt on the cover. Collecting and preserving the autographs of friends and others is a charming custom. There is also a great curiosity on the part of almost every one to see the autographs of distinguished people, and the Album which contains such names is highly prized. The COMPANION AUTOGRAPH ALBUM is one of the most attractive and valuable ever offered to the public. Besides the ordinary blank pages for collecting autographs, a new feature of great value is added. Over thirty of its 125 pages contain fac-simile autographs of distinguished poets, historians, statesmen, journalists, essayists, and novelists. In addition, in the hand-writing of the authors, are reproduced stanzas from several famous poems. These have been taken, in most cases, directly from the original manuscript, which adds great value to the collection. Sent free for 3 subscribers at \$1.50 each; or we will supply it post-paid, for \$1.00.



No. 27.—Embroidery Frame.—With the Embroidery Frame is also suitable canvas and 3 Design Books. It is made of cherry wood, highly polished. The Frame is in size, 9x10 inches. The Canvas on which the embroidery is to be done, is first fastened to the frame, as seen in the cut, and then, by turning the screws of the Frame, the Canvas is made tight, so that designs can be worked most beautifully, and with great ease and rapidity. Sent free for 3 subscribers at \$1.50 each; or we will supply it post-paid, for \$1.00.

No. 28.—Crandall's Improved Building Blocks (No. 3) furnish a most attractive

amusement for children. Churches, Dwellings, Barns, Mills, Fences, Furniture, etc., in almost endless variety, can be built with them, and the structures remain so firm as to be carried about. For developing the ingenuity and taste of children they are unequalled. The Blocks are put up in neat boxes accompanied by an Illustrated Sheet giving various designs of buildings, etc. This is one of the most successful toys ever invented. Hundreds of thousands are in use. Two subscribers, at \$1.50 each, will secure you a free box, delivered free. —[Or we will send a box, pre-paid, for 90 cents.]



No. 29.—Crandall's District

School.—This very amusing group of teacher and scholars in the "district school," will delight every Child, and Man and Woman too. The grave "Master," seated by the desk, with his "whisking stick"; the boys and



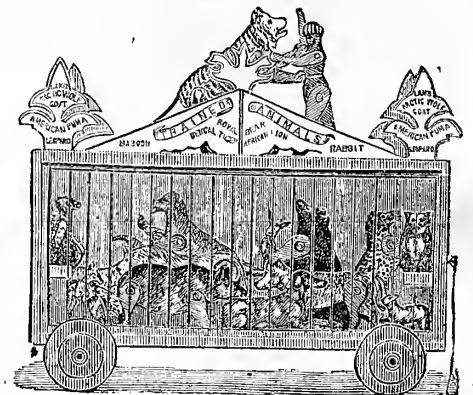
girls with their books; the "Little Lamb" that has followed Mary to school; the "Dunce" and his cap, and the altogether comical appearance of the whole company, make this one of the most attractive toys of Crandall's invention.—Three subscribers at \$1.50 each, will secure a box, carriage prepaid. [We send one, post-paid, for \$1.20.]

[JUST OUT.]

[BEST TOY EVER PRODUCED.]

No. 30.—Crandall's Happy Family.

—A splendid new Invention of C. M. C.—The fifteen animals, with their keeper, are well made, strong, durable, and wonderfully true to nature. They can be arranged in an endless variety of positions and



combinations, producing the most vivid and startling effects. When not in use they can all be packed away in the box, which is neat and strong; when the wheels alone are adjusted, the owner has a nice wagon; when the ornaments are placed in position—a beautiful cage, or travelling show; and when the animals are added to this, and set up, as any wide-awake child can arrange them, the effect is "stupendous!" A Toy so complete, or so comprehensive of the wants and tastes of children, as this, has never before been offered. It is not only a "Happy Family" itself, but carries the spirit of happiness into every family where it goes, filling the heart of its fortunate young possessor with delight. Only 4 subscriptions at \$1.50 each will secure this attractive toy free. [Or we will supply one for \$2.00.]—Expressage to be paid by receiver.

No. 31.—Crandall's Heavy Artillery.

—The greatest amusement of the age! Recreation at home for all ages, and for all seasons! Crandall's Heavy Artillery is made up of a large Cannon, complete, which throws a 1½-inch Rubber Ball to the distance of 30 feet or more, and Sixty Blocks (Red, White, and Blue), to build up Fortifications; also a Company of Soldiers, with Officer and Flag, to Garrison the Fort. The Game is to heat down the Fort by the use of the Big Gun, and hit the Soldiers, Flag, etc., each of which counts one to five, in making up a score. One can use it alone for artillery practice; and two or more can use it in competition, the

same as in target practice, or Ten-pins, or Croquet, or Billiards, for all of which it is a good substitute, to be used at home, in any room, and at any time. Rules, Illustrations of a variety of Forts, etc., accompany each

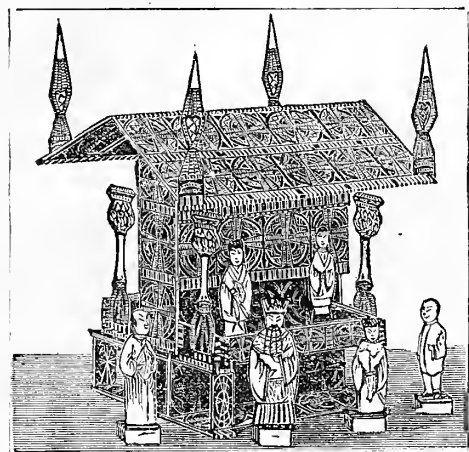
Premium 31



CRANDALL'S HEAVY ARTILLERY.

box containing the set, and the box is 18 inches long, 6 inches high, and 8 inches wide. Six subscriptions at \$1.50 each will secure this. [Or, we will send it on the receipt of \$3.00.]—Expressage to be paid by receiver.

No. 32.—Crandall's Chinese Blocks.—In this most attractive combination, Mr. Crandall gives us the original Building Blocks, with an



entire Chinese Family, the various blocks and figures being brilliantly colored. With a single Box, which contains a Set, one can build Chinese Houses, Palaces, Pagodas, Gardens, etc., etc. Thousands of structures of the Chinese style can be made with a Box of these fascinating blocks and figures. Only 3 subscriptions at \$1.50 each, will secure this free, carriage pre-paid to any part of the United States. [Or we will send a box anywhere in the United States, prepaid, on receipt of \$1.25.]

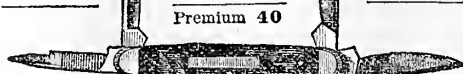
No. 33.—Companion Tool-Chest,



No. 1.—This combination is well adjusted, and it is a convenience for the Family, Store, and Workshop.—It combines: A Rosewood Plane; One Gouge; One six-inch Boxwood Rule; One Medium Chisel; One inch Cutter, used also as a Chisel; One Screw Driver; One Saw; One Awl; One Gimlet. These tools are all made from the best cast steel. The chuck is beautifully Nickel Plated. It will hold a tool as small as a pin head. They are packed in a handsome box. For 4 Subscribers at \$1.50 each, we send this free; or supply it to any one, and send it, post-paid, for \$1.50.

Nos. 34, 35, 36.—American Table Cutlery.—Useful, very desirable, well tempered, and wanted by everybody! We are glad to be able to offer

really good articles of American manufacture, such as are competing successfully with the best foreign make. The MERIDEN CUTLERY COMPANY, who supply them to us, recommend these Knives as equal to any Cutlery in the market, and their recommendation is a guarantee wherever they are known. We offer two kinds of Knives, and three sizes of each kind. No. 34 have Rubber Handles, which are actually boiling-water proof, so that, if they were accidentally to remain in it for several minutes, or even hours, they would not be injured. The Blades are of the best steel, and warranted. Premium 34 is the Desert or Tea size, sold at \$14.75 per dozen.... We present of these twelve knives and twelve forks to anyone sending only 19 subscribers at \$1.50 each.... For 22 subscribers, at \$1.50, or 41 at \$1.25, we will give either the medium size, or the large Dinner size, sold at \$15.70.—Premium 35 have Ivory Handles, are selected with great care, have Steel Blades, and are beautiful articles; they are the Tea or Dessert size, which, with forks, sell at \$18.50. Only 24 subscribers, at \$1.50 each, secures these.... For 28 subscribers at \$1.50, or 52 at \$1.25, we will send the medium size, or the Dinner size, sold at \$21.20.... For 30 names, at \$1.50, or 57 at \$1.25, we will send the larger Dinner size, sold at \$22.50. The Forks, which accompany these Premiums, (Nos. 34 and 35,) are made of genuine Alabata, and warranted double-plated with coin-silver. These Forks are furnished to us by the MERIDEN CUTLERY Co.... Premium 36, the Carving-Knife and Fork (given for 7 subscribers), are made by the MERIDEN CUTLERY Co., with best Ivory, balanced Handles. They are beautiful, and serviceable articles for daily use. These premiums are very useful and desirable, and have been secured by many persons in past seasons. —[We will send any of the above named articles, on receipt of the price specified, in cash, or named.] Purchaser to pay expressage.



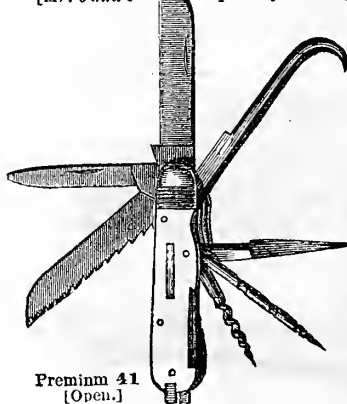
Nos. 37, 38, 39, 40.—Pocket Knives.

—HERE'S FOR THE BOYS AND GIRLS!—These Premiums are among the most pleasing and useful that we have ever offered. Every boy, and girl too, wants a pocket knife. We give them an opportunity to obtain a most valuable one, for merely a little effort. Any boy or girl can easily collect 4 to 5 subscribers, and receive one of these fine premiums free. (see table, page 439). These knives are furnished by the MERIDEN CUTLERY Co., 49 Chambers St, New York, whose work is equal to any done in this country or Europe. No. 37 is a neat, substantial Knife, with three blades and buck-horn handle. No. 38 is a still finer article, with four blades and pearl handle. No. 39 is an elegant Knife, with five blades and shell handle. No. 40 (see Engraving) is a Lady's beautiful Pocket Knife, with four blades and shell handle.—[Any of these knives will be sent by us, post-paid, on receipt of the price, in cash, as named for each in Table, p. 439.]

No. 41.—Multum in Parvo Pocket Knife.—Boys, Read this.

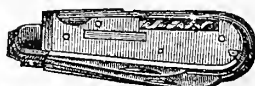
[Mr. Judd's

special favorite.]



Premium 41 [Open.]

"tools" is often worth a "quarter," by being on hand and just the thing wanted in an emergency. He sent an order to England at three different times, but only received much larger, clumsier articles, less effective, and costing \$5 each, and finally learned that the original maker was dead. He then got some English cutlery here to make them, but they did not always succeed in keeping up a supply of first-class articles. We now get them all right of the MERIDEN CUTLERY COMPANY, and much cheaper than any imported. (Mr. Judd

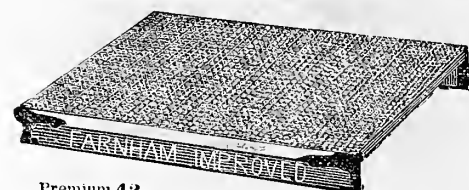


Premium 41 [Closed.]

could find none as desirable while in London on his last visit.) The Engraving shows the parts of the knife, except the very convenient and very effective Screw-driver hidden by the opened large blade. The Saw is double-toothed, and will cut an inch board, saw off a good-sized stick, cut a notch, etc. The Hook is used to lift a stove-cover, pry open sundry things, clean a horse's hoof, pull on the boots, etc. The Punch makes holes in harness, wood, etc., which can be enlarged by its sharp corners. The Gimlet and Corkscrew are convenient, of course. The Tweezers and long Pointer, or Brad-awl, drawn from the end of the handle, often come into use. The back of the Hook makes a good Hammer for tacks, and small pounding. The inside of the Hook forms a small Nut-cracker. All close into a compact white handle, the whole weighing only 2 ounces. IT IS A POCKETFUL OF TOOLS. Seven subscribers at \$1.50 each brings it free, post-paid. —[We will send one, post-paid, for \$3.50.]

Every Family Wants This.

No. 42.—First-rate Wire Bed Mattress.—Just the thing for Every Family.—This is something we would like to see on the bed of every hard-working man and woman in the country, and it is "good

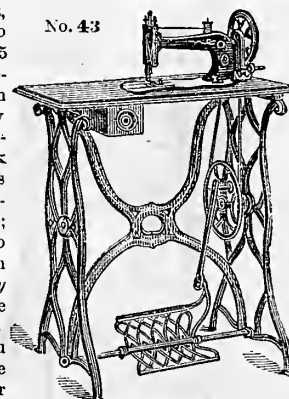


Premium 42

enough for a king." A smooth surface of woven fine wire, so "kinked and linked" that it is thoroughly elastic, yielding gently to pressure like a rubber sheet, or feathers, or a water surface, yet durable, and without the perspiration retaining surface of rubber or feathers. We have used them four years, and would not be without one for five times its cost. Many families may now secure one, free, by simply collecting and forwarding only 17 subscribers at \$1.50 each. It is called the "Farnham Improved Woven Wire-Bed," and is manufactured by HIRAM BUCKINGHAM, Chester, Conn. The only covering it needs is blankets, or mattress—enough to give warmth to the body underneath, according to the season. They are made in sizes to fit into any ordinary bedsteads. They are lasting, and require no tightening-up arrangement. They can go anywhere as freight. (Give us size wanted.) The price is reduced to \$12.00. [On receipt of this price, we will forward one to any address; or we will send one free for a premium, as above.] Freight to be paid by the receiver.

Nos. 43, 44, 45, 46.—Sewing Machines.—Your Choice of Four Kinds—Easily Obtained.

—A good Sewing Machine lightens the labor, and promotes the health and happiness of those at home." Any good sewing machine is a great treasure in any household; we would as soon think of abolishing the plow, and digging up the fields with a spade, as of being without a sewing machine. Upon the mother's health, vigor, and serenity, largely depend the child's health, vigor, and success in life, as well as his moral character. The everlasting "stitch, stitch, stitch," the bending over the work, the loss of sleep, and the lack of right exercise have brought millions to early graves, and seriously injured the health of millions upon millions. Reckoned in dollars, a sewing machine pays largely. If one cost \$500 even, the interest on that, less taxes, would be about \$32. The total sewing in most families is equal to at least 4 months of steady hand-sewing. If hired, this would cost, board included, \$5 to \$10 per week, or \$85 to \$170 a year, three-fourths of which would be saved by using a sewing machine that will work at least 4 times as fast, (cutting, basting, etc., included); or a saving of \$50 to \$100, or more, each year. We say to every man, Get your wife a Good Sewing Machine, even if you have to sell a favorite horse, or an acre or two of land, or can borrow the money—get the sewing machine, anyway. If you can get a machine through our premium list, and thus save the cash it would cost, well—but get the machine. (Multitudes have obtained them free through our premiums, by collecting

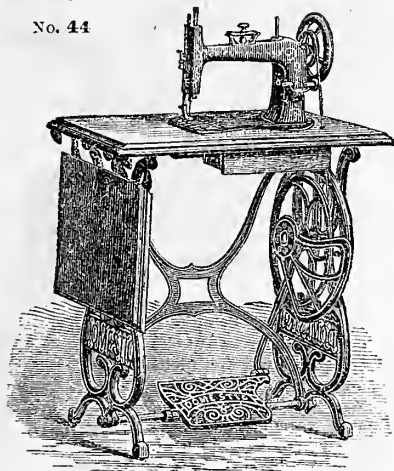


No. 43

"SINGER" MACHINE, PRICE \$30.

subscribers on rainy days and evenings. Almost any man or woman can readily do this. The premium list may be collected in your own neighborhood and elsewhere.) The machines manufactured by the **Singer Manufacturing Company**, 34 Union Square, New York, are among those most favorably known for simplicity and strength. The machine offered by us is mounted on an Ornamental Iron Stand and Solid Black Walnut Table, with Drawer, price, \$30. For work this is just as good as their most expensive machine—differing (No. 43) only in cabinet work and ornamentation. We send it free for only 37 subscribers, at \$1.50 each. Carriage

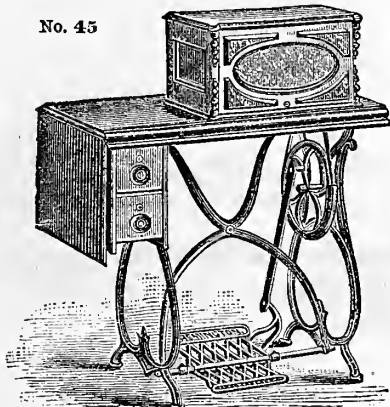
No. 44



"DOMESTIC" MACHINE, PRICE \$15.

to be paid by receiver.... The **"Domestic" Sewing Machine Company**, Broadway, corner of 14th St., New York, manufacture a machine for which is claimed the greatest simplicity, the fewest parts, all strong and with hardened conical bearings, good material, and perfection of workmanship. We offer their No. 1 "Family" machine, ornamented with bronze, and highly finished, and nickel-plated, price \$45. Sent for 52 subscribers, at \$1.50 each. Carriage to be paid by re-

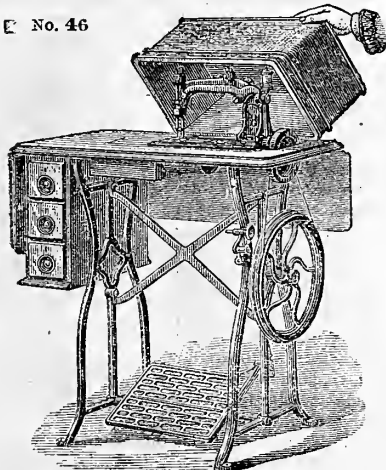
No. 45



"REMINGTON" MACHINE, PRICE \$50.

ceiver.... The **Remington Sewing Machine Company**, Ilion, N. Y., or 283 Broadway, New York City, manufacture a machine which has sprung rapidly into favor, as possessing a most desirable combination of good qualities, namely, light running, smooth, noiseless, rapid, durable, with perfect Lock-Stitch. Its use is

E No. 46



"WHEELER AND WILSON" MACHINE, PRICE \$60. readily acquired, it is well constructed, and beautiful in design. We offer the \$50 machine. Sent for 60 subscri-

ers, at \$1.50 each. Carriage to be paid by receiver.... The **Wheeler & Wilson Manufacturing Company**, Bridgeport, Conn., claim for their machines, beauty and excellence of stitch, strength and firmness of seam, economy of thread, simplicity, and thoroughness of construction, and speed, and ease of management. The machine we offer, price \$60, is elegantly finished, with Back and End Leaves, Cover and Drawers, Plated, and fine finish. Sent free for 70 subscribers, at \$1.50 each. Carriage to be paid by receiver.

No. 47.—The Aquapult—A Combined Hand Fire-Engine, Portable Brass Force Pump, Sprinkler, etc., etc.—Manufactured by W. & B. Douglass, Middletown, Conn.—This is a new, simple, cheap, effective apparatus, very valuable for throwing water or other liquids for watering gardens, vines, plants, and flowers; for washing windows, carriages, etc.; for carrying promptly to any point to put out beginning fires; for pumping water out of boats, cellars, etc., etc. It will pump 5 gallons a minute, and it throws a stream readily against the second story windows, or even on to the roof of a two-story house. The stirrup, adjustable by a screw at any point according to the depth of vessel, holds the pump firmly by means of the foot, leaving one hand free to work the handle and the other to direct the rubber hose - pipe. It is simple in construction, is made of brass, packs into a small space, and weighs but 5 pounds. Price, complete, with three feet of rubber hose, discharge pipe, and two nozzles, for single stream and for spray or sprinkler, \$9.00. Thirteen subscribers at \$1.50 each, will secure the whole free, [or we will supply it on receipt of \$9.] Receiver to pay carriage or expressage in either case.



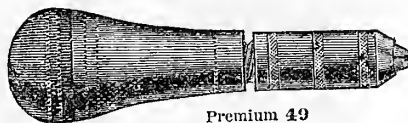
Premium 47.



Prem. 48

No. 48.—Self-adjusting, gold plate, Watch Key.—This Key is universally acknowledged by Practical Watchmakers to be the best ever offered to the trade. Several times, while on a summer trip in the country, we were able to accommodate friends, who had lost or mislaid their own watch keys, with one that would fit any watch, and it was one of these neat little things of Birch's invention. Each Key is thoroughly tested before being sold, and the whole is manufactured under the immediate supervision of the Patentee. Three subscribers, at \$1.50 each, will secure free the neat gold plate Key offered as Premium. For four subscribers, we will send free the more expensive style, celluloid, with gold-plated tips, retailed at \$1.50. Made by J. S. Birch, 38 Dey St., N. Y.—[Or we will send one, post-paid, for \$1.00; or the finer style for \$1.50.]

No. 49.—Pocket Tool Holder.—(See Engraving.)—Every boy (or man) will be glad to get hold of this Premium. We kept a similar, but less perfect set in use many years, and found it very convenient for a thousand little jobs. In a maple handle, which is hollow, with a ligum-vitæ head, are packed twenty small cast-steel tools, any one of which may be quickly adjusted to the handle. It will also hold for using, anything from an 8-inch mill-file to a cambric nee-

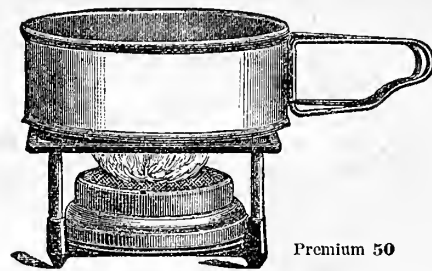


Premium 49

dle. Only 3 subscribers, at \$1.50 each, sent to us will secure you a free set, post-paid. These are made for us by the **MILLER'S FALLS MANUFACTURING Co.**, 74 Chambers St., N. Y.—[Or we will send one, pre-paid, for \$1.00.]

No. 50.—Houchin's Improved Patent Pocket Cook Stove.—With Gridiron and Boiler (with folding handles) holding nearly one quart, which can be used as a drinking cup. The cut represents the Stove in operation, with the boiler placed upon it, which will boil water in five minutes to make 2 or 3 cups of Tea, Coffee, or Chocolate; to Boil Eggs, Stew Oysters,

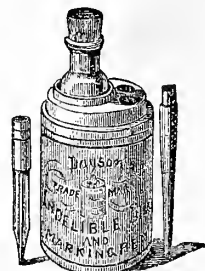
etc. Pour about two tablespoonsful of alcohol through the wire gauze, and light with a match or taper. The Lamp being filled with an indestructible packing will



Premium 50

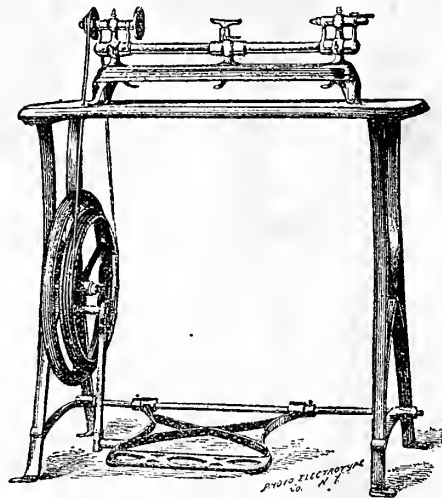
not spill or explode. Send three subscribers, at \$1.50 each, and get it free, post-paid. These stoves are made by the **HOUCHIN MANUFACTURING Co.**, 150 East 169th St., New York.—[We will send one, pre-paid, for \$1.25.]

No. 51.—Payson's Indelible Ink, and Briggs' Marking-Pen Combination.—(See Engraving.)—Payson's Indelible Ink is too well known to need further commendation. It is almost indispensable in the family. Briggs' Marking-Pen has been before the public for fifteen years, and is justly celebrated for all kinds of marking, and particularly for writing upon coarse fabrics. The Pen and Ink bottle are put up in a neat box-wood case; the glass pen unjoints in the middle and fits inside the case. The whole is thus portable and always ready for use, and protected from injury by evaporation or breakage. We have used this pen and ink for several years with entire satisfaction. Presented, and sent post-paid, to any one who simply sends us 2 subscribers, at \$1.50 each.—[We will send a bottle of the Ink, with Pen, post-paid, on receipt of 75 cents.]



Premium 51

No. 52.—New Tubular Foot Lathes.—These are new First-rate Lathes, the smaller one about the size of a sewing machine table, and as convenient for the ingenious Man or Boy as the sewing machine is for women. It is made strong and durable, with many ingenious contrivances that adapt it to a great variety of work. With its attachments, it constitutes quite a Machine Shop; can be set in any room; the foot-gear on



balance-wheel does away with the need of steam or other power.—These Lathes are made of the best materials, the spindles, centres, and all working parts of steel; the bright parts nickel-plated, the other parts japanned, and are mounted upon strong and handsome stands, with black walnut tops; the stands for the smaller size are low, so that the operator can use them while seated.—They are artistic in design and will be an ornament to a sitting-room, while they are sold at as low prices as the poor articles usually found upon the market.—Not only is such a machine of practical use, but every boy and young man who has one, learns to become "handy," and whatever his occupation, he is ready to fix this thing and that, without running to a distant shop for any and every repair needed.—These Lathes are of three sizes: No. 1 is 17 inches long, swings 6 inches, price \$20.00. No. 2 is 24 inches long, swings 7 1/2 inches, price \$25.00. No. 3 is 31 inches long, swings 8 1/2 inches, price \$30.00.—No. 1 will be presented to any one sending 26 sub-

scribers at \$1.50 each; No. 2 for 31 subscribers, and No. 3 for 37 subscribers. Or any one will be supplied at the prices named above for each. They are made by the **USEFUL MACHINERY COMPANY**, No. 154 West 19th Street, New York, from whom free descriptive circulars may be obtained on application by postal card. *This is a splendid present to make to a Boy or Young Man, or to yourself, for the Holidays, or at any other time.*

No. 53.—Steinway Piano.—A Superb Gift.—SEVEN OCTAVE ROSEWOOD CASE; LARGE FRONT ROUND CORNERS; BEVELED TOP; OGEE Moulding; RICH CARVED LEGS AND LYRE; OVERSTRUNG PATENT DUPLEX SCALE; PATENT IRON CUPOLA AND PIER FRAME; PATENT AGRAFFE ARRANGEMENT THROUGHOUT THE ENTIRE SCALE, SAME AS IN GRAND PIANO.—This is one of the most elegant Premiums ever offered; regular and only price \$650. That this Magnificent Instrument comes from the celebrated establishment of MESSRS. STEINWAY & SONS, Nos. 109 & 111 East 14th St., N. Y., is enough to say; but it is due to these enterprising manufacturers to state that while their pianos have repeatedly received the FIRST PREMIUMS, by the award of the most competent judges the world can produce; at the Universal Exposition in Paris, they received the FIRST GRAND GOLD MEDAL, and at the Centennial Exhibition in Philadelphia, 1876, they were awarded the Highest Honors, viz.: TWO MEDALS OF HONOR AND TWO DIPLOMAS OF MERIT—no other Piano exhibitor having received a similar distinction. Official report on STEINWAY'S exhibit in the Main Building: "For greatest concert capacity in Grand Pianos, as also highest degree of excellence in all their styles of Pianos, viz.—largest volume, purity and duration of tone, and extraordinary carrying capacity with precision, and durability of mechanism; also, novel disposition of the strings and construction, and bracing of the metal frame." The report then minutely describes and emphatically endorses the six principal patented improvements which have made the Steinway THE STANDARD PIANOS OF THE WORLD. The world renowned Artists and Composers,

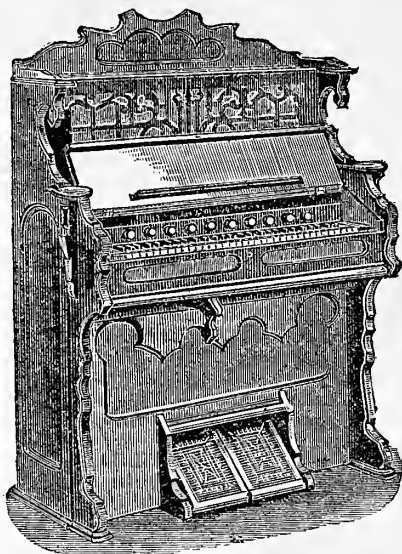


Premium 53

Dr. Franz Liszt and Anton Rubinstein, use the Steinway pianos exclusively, and pronounce them the standard pianos of the world. Many of the best judges in America say the same. We also speak from personal knowledge, as two of our Officers and many of our friends, who are good judges, have for years each had these pianos in use. This splendid Premium may be secured by many persons. Sending us 600 subscribers at \$1.50 each will do it. It may be done by securing the 600 subscribers at \$1.50 each, and save the entire cost, or by collecting the names at \$1 each, and paying the difference of \$300. [We will make a proportional allowance if half or more of the names are collected.] Many Ladies, and some Men, have secured this Premium, and some have obtained two or more, and sold the extra ones, thus securing large salaries. Classes of Young Ladies at school can unite in canvassing, and obtain a present for a Teacher, or a Piano for their school-room. We shall be glad to give this premium to a large number. Send to MESSRS. STEINWAY & SONS, New York City, for a free circular describing it.

No. 54.—"National" Organ.—The establishment of MESSRS. GEO. A. PRINCE & Co., Buffalo, N. Y., has long been famous for the excellence, durability, and elegance of the organs and melodeons manufactured there. We have had in constant use for sixteen years (part of the time in our Sunday School, and part of the time at home), one of Mr. Prince's Large Melodeons, piano case, and it is just as good to-day as ever, and we would not exchange it for any other kind. Mr. Prince has, however, gone on improving the instruments—"approaching greater perfection." No one can fail to be

pleased with these instruments. The "National" Organ, which we offer, is one of their latest and best styles, Price \$150, and it is claimed by the makers, that for power, quality of tone, style, finish, and the great variety of combina-



PRINCE'S "NATIONAL" ORGAN.

tions, of which it is susceptible, its equal has never been produced before. The organ has two full five-octave sets of reeds, and the Kent improved Vox Celeste Stop. It is an elegant premium.—Sent free for 150 subscribers, at \$1.50 each. Freight from manufactory to be paid by receiver.

No. 55.—Universal Clothes Wringer.—(See Engraving below.)—A very useful, time-saving, strength-saving, clothes-saving implement, that should be in every family.

Here is a thing that is of great value, "and no mistake about it." It will pay for itself several times a year, in any family. The wringing out of clothes by hand is hard upon the hands, arms, and chest, and the twisting stretches and breaks the fibers with lever power. With this Wringing Machine, the garments are passed rapidly between elastic rollers, which press the water out better than hand wringing, and as fast as one can

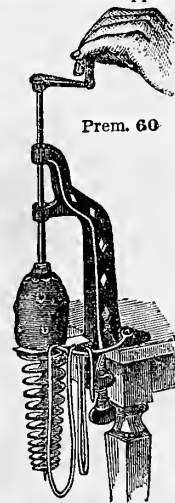
pick up the articles. A most important feature of this Universal Clothes Wringer is the peculiar cog-wheel arrangement, which makes both rollers turn together, and always keep their place. Without these, the crank-roller will slip, and pull the fibers, and injure the fabric. A multitude of letters of thanks for these Ma-



Premium 55

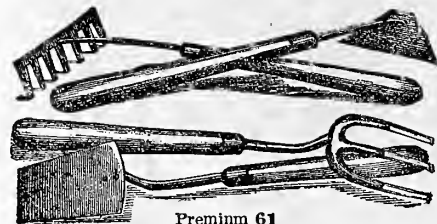
chines, given by us as Premiums, have been received. It is easy to gather at the regular rate of \$1.50 each, the 12 subscribers, and this will secure a present of one of these very valuable \$7.50 Universal Wringers. They are made by the METROPOLITAN WASHING MACHINE CO., Middlefield, Ct. R. C. BROWNING, 32 Cortlandt St., N. Y. [We will supply one of these valuable machines on receipt of the price, \$7.50.] Receiver to pay expressage.

No. 56.—Turn-table Apple Parer, Improved.—No. 57. Climax Apple Corer and Slicer.—No. 58. Family Cherry Stoner.—No. 59. Bay State Apple Paring and Slicing Machine. No. 60. "Saratoga" Potato Peeler and Slicer.—(See Engraving.)—All the above machines are most useful in every household where apples, cherries, and potatoes are to be cared for. Manufactured by the GOODSELL CO., Antrim, N. H. We have never seen the work for which these machines were contrived, more rapidly or better done, than they will do it. The Apples are pared, cored, and sliced with the greatest facility, and the Cherries are readily relieved of their stones, leaving the fruit in good shape. The "Bay State Parer and Slicer" has a new attachment to the Knife Head which cuts the Apple into slices, and places them at once side in a dish on the table. The "Saratoga" slices and peels the potato at one operation, and is a very ingenious and useful contrivance. Only three subscribers, at \$1.50 each, are required to get any one of the above, except No. 59, which requires four. For nine subscribers at \$1.50 each, we will send the whole (5) of them free, delivery unpaid. [Or we will supply any one of them at the price named (see Table).] Receiver to pay expressage. For prices see Premium Table, page 439.



Prem. 60

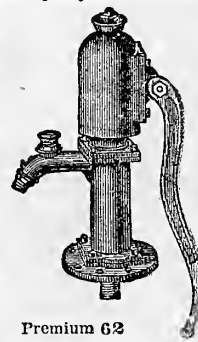
No. 61.—Moore's Floral Set.—This is a beautiful Premium—a complete set of Ladies' or Children's Garden Tools, for the cultivation of flowers, consisting of a Floral Hoe, Spade, Fork and Rake, (as shown in the engraving). They are made of the best steel and iron, with finely polished hard-wood handles, light, durable, and highly finished, and each set inclosed in a box. They will be found very convenient in the garden or greenhouse. They are useful, pleasing toys for the little folks, requiring only 3 subscribers, at \$1.50



Premium 61

each, to get them free. Better get more subscribers, and secure half a dozen sets or more, for others, to come with yours, as they can all come cheaply as freight. Made by the MOORE MANUFACTURING CO., Kensington, Conn. [We supply one set for \$1.00.] Receiver to pay expressage.

No. 62.—W. S. Blunt's "Universal Force Pump."—[Patented July 23, 1876.]—(See Engraving.)—What most country families need. An indoor Force Pump for 1¼ inch Suction Pipe; capacity 15 to 18 gallons per minute. These pumps are tested to 150 pounds pressure, and will throw water from a hose pipe 50 feet high, and 90 feet horizontally, and have revolving tops, so that they can be made right or left hand. Being operated by a side shaft entering through the air-chamber, there is no piston rod to wear out the brass stuffing box as in other pumps. They are among the most powerful, simple, and durable pumps to be had. The ease with which any part can be renewed in case of accident, or access had to the interior for repairs, commends them for UNIVERSAL FORCE PUMP—green-houses, farmers, and stockmen, as well as for city use. Send for a descriptive circular to THE NABON MANUFACTURING CO., 71 Beekman St., and 71 Fulton St., New York. We will send you this Pump free, for your own use, (or for sale at \$12.) if you simply procure us 18 subscribers, at \$1.50 each, which you can readily collect during a very few evenings or on rainy days. It will well repay the effort.—[We will supply this pump on receipt of the price, \$12.00.] Receiver to pay expressage.



Premium 62

Silver-Plated Ware—Swindling.

Next to returning *nothing* for one's money, there is hardly a greater fraud than that practised by some sellers of silver and gold-plated articles. With the aid of an electric battery, a piece of almost any metal put into a solution of silver can be so perfectly coated with the silver that nothing but pure silver can be seen, yet the coat may not be a thousandth part of the thickness of tissue

Premium 63



paper. Six pounds of lead, costing 30 or 35 cents, stamped into 100 Teaspoons of good form, can be perfectly coated with less than a dime of silver. The whole expense of labor, metals, chemicals, etc., may not exceed 75 or 80 cents, and thus there will be produced *good-looking* silver-plated Teaspoons at a cost of 5 cents a Set, or less than 1 cent each! And a vast amount of plated ware of *this character* is palmed off upon the country. The articles look well, until used a few times, when the *coating* disappears.—But properly managed, the electric process will put on a coat of pure silver of *any desired thickness*, and if the base metal be good, and the plating thick enough, such plated ware is just as good for practical use as if the whole were solid silver, while the cost is far less. Further, if after years of hard service the silver becomes worn off, the articles can be replated as good as new at a moderate expense. We have articles constantly used eight and ten years, and still showing nothing but silver. In buying silver-plated ware, *every thing depends upon the honesty of the manufacturer*, and the judgment of the buyer or seller.—We have taken great care in selecting articles to offer to our readers, to get not only those of *superior style*, but those which we can warrant to be *heavily plated*, and exactly as represented. Such articles as these are Premiums 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, described below. Our readers who get any of these, as Premiums, (or by purchase), may rely upon having first-rate articles, and as cheaply as they can be *honestly* made. They can find plenty of similar articles, at less than a fourth the prices named, and that will look as well for a few weeks, or months, if not used, but they will be *very dear*.—The Premiums Numbers 63 to 73 inclusive, are made for us by the MIDDLETOWN PLATE COMPANY, at Middletown, Conn. Mr. Judd is well acquainted with this Company and its Officers, and visits the extensive works frequently, observing the process of manufacture, and he confidently recommends their work as being *just what it professes to be*—and every way reliable. A similar commendation applies to Premiums 74, 75, 76, and 77, from the MERIDEN CUTLERY Co., whose work is first-rate.

No. 63.—Tea Set.—This is a **Splendid Set** of six pieces, full size, viz.: a Coffee Pot, a Tea Pot, a Water Pot, a Sugar Bowl, a Cream Cup, and a Slop Bowl—tasteful enough for the most stylish mansion—all beautiful, of uniform design, late pattern, with raised and embossed figure work. They are none of the common, cheap, silver-washed stuff that will look finely so long as unused, but are the *best triple-plated on white metal*. (See notes on plated ware, just above.) For all practical purposes, and for ornament, they will be as good as solid silver, for years. This No. 63 (and the others also), afford to a multitude of persons a rare opportunity to get *beautiful and useful* articles for home use and for wedding and other gifts. It will be comparatively easy to collect names of subscribers enough to secure one or more of these articles. In a few evenings a gentleman could easily get the 70 subscribers only, at \$1.50 each,

and secure this splendid \$60.00 Tea Set *free*, for his wife or a friend. Many a young man can thus get one for a mother, a sister, or *friend*. Any lady can get a Set for herself in a brief time. [We will forward one of these elegant sets on receipt of \$60.] Receiver to pay expressage.

No. 64.—Ice (or Water) Pitcher.—A large, highly Ornamental Article, that will adorn the table, as well as serve a very *useful* purpose, and last many

years, with no danger of breakage. Price \$13. It is same make, same metal, plating, etc., as No. 63. Send us only 18 subscribers, at \$1.50 each, and you will have this splendid Pitcher.—For 22 subscribers, at \$1.50 each, we will give the Pitcher with a **round Salver**, of pattern to correspond, (value \$17.50).—For 34 subscribers we will send the Pitcher and a large 14-inch **Ob-long Salver** (value \$28.00), which is large enough to hold the Pitcher and two goblets.—For 43 subscribers we will send the Pitcher, the **Ob-long Salver**, and a *pair* of beautiful **Goblets**, silver without, and gold-plated inside, (value \$34.75). This *Complete Set* is exceedingly desirable, though the Pitcher alone, or that with Round Tray, or with large Ohlong Salver, will answer well for *use and for ornament*.—[We will also supply the Pitcher, and any one or all the articles above mentioned, at the prices given for each.] Receiver to pay expressage.

No. 65.—Syrup Cup with Plate.—Every well set table needs at times a syrup cup. This elegant cup stands on a fine plate of suitable design.

Premium 64



Only 10 subscribers at \$1.50 each, are needed to secure it *free*. [Or, when desired, we will send one on receipt of the price, \$6.25.] Receiver to pay expressage.



Premium 65



Premium 66

No. 66.—Child's Cup.—(See Engraving).—A beautiful gift for the *Little One*. Triple-plated on the outside, and *gilded* on the inside. It never breaks, and will last for many years—indeed, be a *life-keepsake*. Obtain *only 7 subscribers*, at \$1.50 each, and you can secure one of these beautiful cups for your own child, or a name-sake, or other favorite.—[Or we will forward one on receipt of price, \$3.50.] Receiver to pay expressage.

No. 67.—Butter Cooler.—This is a really good and useful article, as well as an ornamental one. The pattern is very taking, having been selected from a



Premium 67

large assortment. A very little ice in the holder under the plate will keep butter cool and fresh for a long time on the table, even in the hottest weather. The bright surface reflects off outside warmth, thus keeping the butter cool. Same metal, from same House as No. 63. This fine premium is *presented* to any one who simply collects and forwards us 10 subscribers, at \$1.50 each, easily done.—[Or we will send one to order on receipt of \$6.50.] Receiver to pay expressage.

No. 68.—Pickle Jar and Fork.—The jar is of glass, handsomely mounted in silver-plated frame, with fork attached. It is a very ornamental article for the table, as well as useful, and would prove an acceptable present to a young house-keeper. 8 subscriptions at \$1.50 each will secure it *free*. [Or we will forward one on receipt of \$5.] Receiver to pay expressage.



Prem. 68

Nos. 69, 70.—Cake Baskets.—Two styles are offered, both of *elegant* patterns, very taking, *useful*, and *beautiful* table ornaments—just the thing every one wants. From same makers and same metal as No. 63. No. 69 presented to any one sending only 12 subscribers, and No. 70 to any one sending 15 subscribers, at \$1.50 each.—[Or we will sell No. 69 for \$7.50, or No. 70 for \$10.] Receiver to pay expressage.

Nos. 71, 72, 73.—Casters.—These are all of *handsome* patterns, richly chased, No. 71 containing five cut glass bottles, including mustard, & the two others six, including a mustard bottle—*useful*, necessary, ornamental for every dining table. Same makers, and same metal and plating, as No. 63. Send us only 8 subscribers, at \$1.50 each, and get No. 71, or 12 and get No. 72, or 15 and get No. 73 *free*.—[Or we will sell No. 71 for \$5.25, No. 72 for \$7.50, or No. 73 for \$10.50.] Receiver to pay expressage.



Premium 73.

No. 74.—One Dozen Tea-Spoons.—No. 75.—One Dozen Table-Spoons.—These are all of the elegant *Crown pattern*, fine metal, *triple plated*, and for beauty of design, and excellence of workmanship, will be found unsurpassed by solid

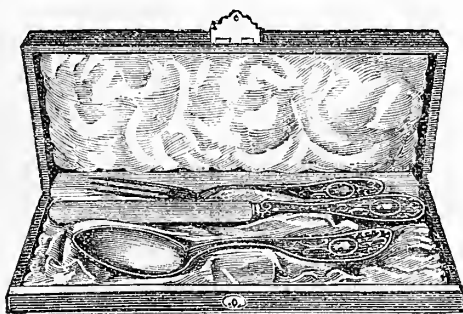
silver. These spoons are far cheaper than many others we have found at half the price, and are well worth canvassing for. They are made by the MERIDEN CUTLERY CO., No. 49 Chambers St., N.Y. City. Eleven subscribers sent us at \$1.50 each will secure 12 Tea Spoons free; nineteen subscribers will secure 12 Table Spoons free.—[We will sell the Tea Spoons for \$7.25 per dozen, and the Table Spoons for \$14.50; or a set of six for half these prices.] Receiver to pay expressage. We will send a set of six Tea-spoons for 7 subscribers, or a set of six Table-spoons for 12 subscribers, at \$1.50 each.

No. 76.—One Dozen Table-Forks.—The same description and remarks apply to these as to No. 74, and they are from the same makers. (We select as Premiums only such articles as we can warrant in quality



Style of Prem. 74, 75, 76

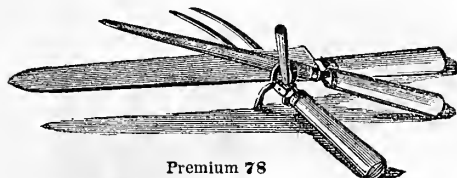
and price, and these the most desirable.) Price \$14.50. Presented free to any one sending only 19 subscribers at \$1.50 each, or a set of six for 12 subscribers.—[We will sell one dozen for \$14.50, or a set of six for \$7.25.] Receiver to pay expressage, if not delivered at this office.



Premium 77

No. 77.—Child's Set; Knife, Fork, and Spoon.—The set is Standard Silver Plate, white metal base, medallion pattern, in satin-lined morocco case; an elegant present. Supplied by the MERIDEN CUTLERY CO. Six subscriptions at \$1.50 each will secure it free. [Or we will send a set on receipt of the regular price, \$3.00.] Receiver to pay express charges.

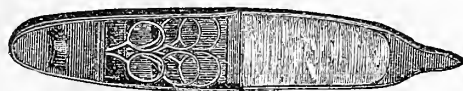
No. 78.—French Cook's Knife, Fork, and Steel.—This is a long (10 in.) thin Knife, with Celluloid or Patent Ivory Handle, warranted not to crack in hot water, made of the best steel and for use rather than ornament; and it is really pleasing to see how easily it slips through a joint of beef. The fork and steel are made to match, and the fork is supplied with the very convenient patent rest. It would save many wry faces, and perhaps hard words, were it in general use. Supplied by the MERIDEN CUTLERY CO., 49 Chambers St., New York. Only 7 subscribers to the American Agri-



Premium 78

culturist at \$1.50 each, will secure the whole free. [We will send the set for \$3.75.] Receiver to pay expressage.

No. 79.—Case of Scissors.—The case is of morocco, handsomely gotten up, and lined with velvet and satin, containing three first quality scissors, crocus finish, length 4.5, and 5½ inches, respectively; a very pretty and useful Premium. Made by the UNITED



Premium 79

STATES STEEL SHEAR COMPANY, West Meriden, Ct., whose manufactures stand deservedly very high in the market. Furnished to us by the MERIDEN CUTLERY CO., 49 Chambers street, New York. Ladies can get this premium free, forwarded post-paid by mail, by sending a clink of only 7 subscribers, at \$1.50 each.—[Or we will send this set, pre-paid, on receipt of the price, \$4.00.]

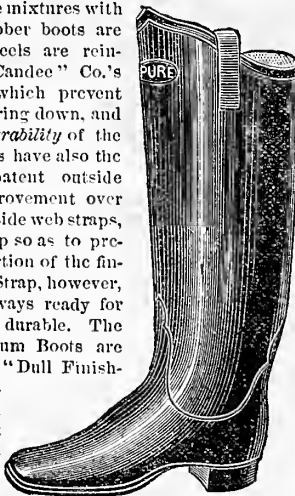
No. 80.—Family Scales.—These scales, combining the advantages of counter and platform scales,



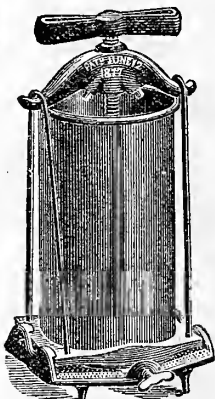
Premium 80

are peculiarly adapted to household purposes. (See Engraving.) They weigh from ½ ounce up to 240 lbs. They have a scoop, or pan, for weighing flour, sugar, or other house stores, and a platform for heavier articles, and are just such an apparatus as is needed for in-door or outdoor use, occupying less than 2 feet square. These scales are manufactured by the well-known FAIRBANKS & Co., No. 311 Broadway, New York, whose weighing apparatus has long ranked as the standard in all parts of the country. Send to them for circulars, if desired. Send us 19 subscribers, at \$1.50 each, and get these fine Scales free.—[We will also supply these scales on receipt of the price, \$14.00.] Receiver to pay the freight.

Nos. 81, 82.—Men's and Boys' Pure Gum Boots.—The "Candee" Pure Gum Boots (L. Candee & Co., New Haven, Conn.) are made with a view to great durability, and are claimed to be entirely free from the adulterative mixtures with which common rubber boots are cheapened. The heels are reinforced with the "Candee" Co.'s patent heel irons, which prevent the heels from wearing down, and therefore add to durability of the Boots. These Boots have also the "Candee" Co.'s patent outside straps, a great improvement over the old-fashioned inside web straps, which always curl up so as to prevent the quick insertion of the fingers. The Outside Strap, however, is quite handy, always ready for use, and perfectly durable. The "Candee" Pure Gum Boots are either varnished, or "Dull Finished." Experience shows that the dull finish boots are not quite so durable as those protected from the atmosphere and from the ammonia of barnyard-manures by a coat of varnish. Hence the manufacturers recommend the Varnished Pure Gum Boots, and warrant every pair to give reasonable satisfaction. We offer the Men's Size (Price \$4.35) for 8 subscribers, at \$1.50 each, or the Boys' Size (Price \$3.00) for 6 subscribers, at \$1.50 each. Carriage to be paid by receiver. In ordering these Premiums, state the size of the shoe you wear.



"CANDEE" PURE GUM BOOT.

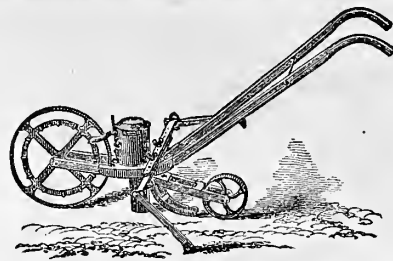


Premium 83

No. 83.—Household Press.—This is one of the most convenient little inventions for the housekeeper that we have seen. It is for pressing corned beef, spiced meats, honed turkey and chicken, etc., etc. By an easy change of the bottom, the press can be used in making jellies, eider, or pressing out lard, tallow, herbs, or beef for tea for invalids, and in many other ways. Supplied by W. A. BOARDMAN, Medway, Mass. We will send one free for 4 subscribers at \$1.50 each, [or on receipt of the price, \$2.00.] Expressage to be paid by Receiver.

No. 84.—Matthews' Garden Seed Drill.—This is regarded as one of the most valuable implements in use. Medals and testimonials confirming its superiority have been repeatedly bestowed upon it. It is designed to be used either in field or garden. In operation, it opens the furrow, drops the seed accurately at the desired depth, covers it, and lightly rolls it, and at the same time marks the next row, all of which is done with mechanical precision, by simply pushing the drill forward. In this way it sows, with an evenness and rapidity impossible for the most skillful hand to do, all the different varieties of beet, carrot, onion, turnip, parsnip, sage, spinach, sorghum, peas, beans, broom corn, fodder corn, etc. The drill is complete in all its arrangements, and is very durable. There are no cams, gears, springs, or belts, to get out of order, nor are there any parts subject

to unusual wear, and, with fair usage, it will last many years, and do a vast amount of service, without requiring



any repairs. Made by EVERETT & SMALL, Boston, Mass. This fine implement sent free for 18 subscribers, at \$1.50 each. [We will sell one for \$12.] Receiver to pay carriage.

No. 85.—Cahoon's Broadcast Seed-Sower.—This Hand Seed-Sower sows from four to



Prem. 85

eight acres per hour, at a common walking gait, throwing wheat and rye from 30 to 36 feet wide; barley, 30 feet; hemp, 28 feet; oats, 23 feet; clover, Millet and Hungarian seed, 22 feet; and Timothy, 18 feet. Price, \$6. Presented to any sender of 9 subscribers for *Agriculturist*, at \$1.50 each. It is manufactured by the GOODELL CO., at Antrim, N. H.—[We will supply one on receipt of the price, \$6.] Receiver to pay express charges.

Nos. 86, 87.—Good Barometers are very Useful to Everybody, now. The recent improvement in weather observations enables one to readily know what the weather is likely to be many hours in advance, and such knowledge is of great value in caring for crops, animals, in planning work, etc.

No. 86.

To almost every farmer, and to many others, a good Barometer will every year pay a very large interest on \$100.—To meet this want, the Publishers have arranged to supply one of the most accurate, simple, desirable, and cheapest **Mercurial Barometers** to be found in the country—just as good for all practical purposes as one costing a hundred dollars, or more, viz.: **Woodruff's Patent Portable Barometer**, manufactured by Charles Wilder, Peterboro, N. H. We have tested Mr. Wilder's work for many years, and can confidently recommend the barometer to all. The Barometers offered are so portable that they can be sent to any distance safely. — *Description*: No. 86 is cased in finely finished, polished Black Walnut. Length, 3 feet; width of top and base, 4 inches; width of shaft, 2 inches; depth (thickness), 1½ inches, with pedestal, 2½ inches deep; mounted with metallic plates, Vernier scale, *Thermometer*, and index. Glass door over the face. Price reduced to \$12.—No. 87 is in neatly turned Case of maple or Cherry. Length, 40 inches; diameter of base and top, 2½ inches. Shaft slightly tapering, about 1½ inches in diameter. Semi-circular glass face; mounted with metallic plates, Vernier scale, and *Thermometer*. Price reduced to \$8.—These Barometers will be securely packed, and forwarded direct from the manufactory to any address. The cost of carriage, which will be small, to be paid by receiver.—We present No. 86 for 17 sub-





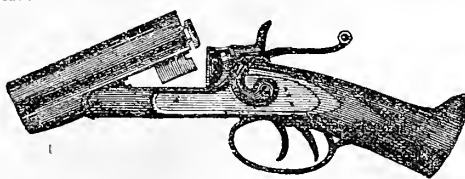
Premium 89—DEFIANCE SPRING WHEAT.

scribers, at \$1.50 each; or No. 87 for 12 subscribers.—(On receipt of price we will forward either barometer.) Send to Mr. Wilder for a full description of instruments.

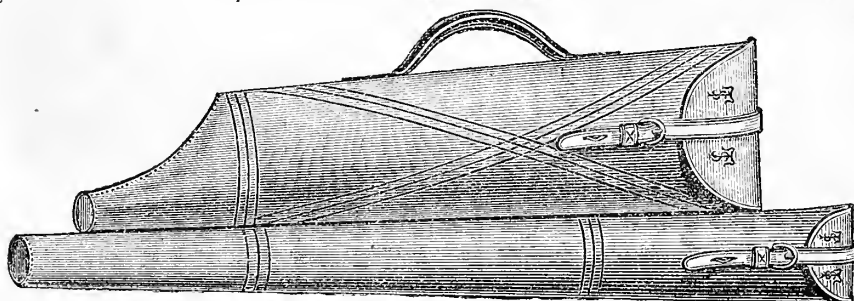
Nos. 88, 89.—New Hybrid Spring Wheat.—After a careful trial of six years, Messrs. B. K. Bliss & Sons, who are known as one of the most reliable seed houses in New York City, offer to the public the two varieties of Spring Wheat, the **Champlain** and the **Defiance**, which we present as Premiums, feeling assured that they will be *valuable acquisitions* to the wheat-growers of the country. We have seen specimens of both varieties, raised in widely separated portions of the country, and they appear fully to sustain what is claimed for them. Premium No. 88, the **Champlain** Spring Wheat, was produced in 1870, by Mr. Pringle, in his endeavors to unite the remarkable hardiness of the Black Sea with the fine and superior quality of the Golden Drop. Several varieties were the result of this hybridization, from which this one was chosen, as realizing the end in view, showing greatly increased vigor and productiveness over both its parents. A careful selection from this for the past seven years has now fully established its character, and we have a wheat bearded like the Black Sea, with the white chaff of the Golden Drop, free from rust and smut, yielding a lighter-colored grain than the former, which makes a flour of *superior quality*. Its strong and vigorous straw, growing 6 to 12 inches higher than its parent varieties, stands erect, frequently bearing even in very ordinary culture heads from 5 to 6 inches in length, containing from 60 to 75 kernels each. We confidently recommend this new wheat as among the earliest, promising to give the grower of this most important crop better results than are produced by the old and "run out" varieties now sown. Four subscriptions, at \$1.50 each, will secure **three pounds** of this wheat, sent post-paid. Carefully cultivated, 3 lbs. will yield several bushels of seed for the next sowing.

Premium No. 89, the **Defiance**, is another variety of Spring Wheat of the highest promise, the result of a series of experiments by Mr. Pringle in 1871, to incorporate superior qualities upon the hardy stock of our common Club Wheat, by hybridizing it with one of the finest, whitest, and most extensively grown sorts of the Pacific Coast. This variety displays great productiveness, vigor, and hardiness. It is a beardless, white chaff wheat, with heads frequently 5 to 6 inches long, very closely set with large white kernels, frequently numbering 75 to 80 on the single head. Its white, stiff, erect straw, exempt from the attack of rust, its earliness, its

like a rifle. Is in a *neat mahogany case*, with 250 rounds of ammunition. Price, \$14. Manufactured by Messrs. J. STEVENS & Co., Chicopee Falls, Mass. Only 19 subscribers, at \$1.50 each, required to get it *free*. Or it will be forwarded on receipt of price, \$14. Without the mahogany case, we will give it, packed in a paste-board box, all complete, with 100 cartridges, on receipt of 18 subscribers, at \$1.50 each.—[We will sell this one for \$12.00]—Receiver to pay expressage.



No. 91.—Double-Barreled, Breech-Loading, Central Fire Shot-Gun—Remington's.—Steel barrels, using paper or brass cartridges, that can be reloaded many times; two dozen of which, and reloader, (costing \$4), and 500 primers, or caps (costing \$1), are given with the gun; one of the finest guns ever offered the American sportsman, combining all the most desirable features of the best imported, together with some valuable improvements not found



with any other. Just as good as many of those imported at a cost of \$150 to \$200 or more. 52 subscriptions at \$1.50 each will secure it *free*; or we will forward one by express or otherwise as directed, on receipt of price, \$45.

Nos. 92, 93, 94.—Long Range Creedmoor Rifles used by most of the successful competitors at the International, State, and other rifle-contests. A great desideratum for shooting one-third to

five-eighths of a mile or more, at game or otherwise. The Remingtons now make them at three prices. *The barrels, locks, etc., all of the same quality, and shooting equally well*—the differences being in the stocks and extra finish. All three have *vernier sight, wind gauge, and spirit level*. No. 92 has a "pistol grip" stock; No. 93 is without pistol grip; No. 94 has a military stock. Some prefer these: it is a good deal a matter of taste, the shooting and calibre of all being the same. 100 subscriptions at \$1.50 each, will secure No. 92, price \$100, *free*—Or 88 subscriptions at \$1.50 each, will secure No. 93 *free*, price \$80—Or 70 subscriptions at \$1.50 each, will secure No. 94 *free*, price \$60 (*with Spirit Level*); or we will forward any style, by express or otherwise, on receipt of the price named.

No. 95.—Single-Barrel, Breech-Loading Shot-Gun, No. 16 Gauge—Remington's.—Plainly made, but shoots just as well as the most costly carved and ornamented weapons. Can be loaded and fired 5 to 10 times a minute: cleaning-rod and loading-stick, accompany the gun. 22 subscribers at \$1.50 each will secure it *free*, carriage unpaid; or we will forward one by express or otherwise, on receipt of \$18.

No. 96.—Archery Goods. The Orange Judd Company have added to their business a "Department" for the supply of equipments for every kind of legitimate Field Exercise and Games. Among these are **Archery Goods**, and the following are a few that can be offered as premiums for subscriptions, *carriage*

½ doz. arrows will be added.—Fine Lancelwood Bow, 5 feet long, price \$2, for 4 subscriptions at \$1.50 each, and for 5 subscriptions ½ doz. arrows will be added.—Fine Lancelwood Bow, 6 feet long, price \$2.50, for 5 subscriptions at \$1.50 each, and for 6 subscriptions ½ doz. arrows will be added.

—Extra quality Self Lancelwood Bow, made to weight, 5 feet long, price \$3, for 6 subscriptions at \$1.50 each, and for 7 subscriptions ½ doz. arrows will be added. The same quality of Bow, 6 feet long, price \$4, for 7 subscriptions at \$1.50 each, and for 8 subscriptions ½ doz. arrows will be added.

[Send two three-cent postage stamps for our "Sportsman's Library" Catalogue, containing a full list of Archery Goods, Sportsman's Equipments, etc., and the outlines of nearly two hundred works. It is beautifully illustrated with nearly 100 Engravings of dogs, horses, birds, fish, and game generally.]

No. 97.—Canvas Gun Cover.—Extra

heavy water-proof canvas, lined with flannel, *Victoria shape*, with binding and handle. Price, \$1.50. Manufactured by THOMSON & SONS, 301 Broadway, N. Y. Four subscribers, at \$1.50 each, will secure this, sent prepaid.

No. 98.—Hunting Shoes.—Oil finished grain leather shoe or moccasin, made with broad heavy soles and spring heel hob nails on heel, laced in front with hooks (over English style water-tight tongue), thus secur-

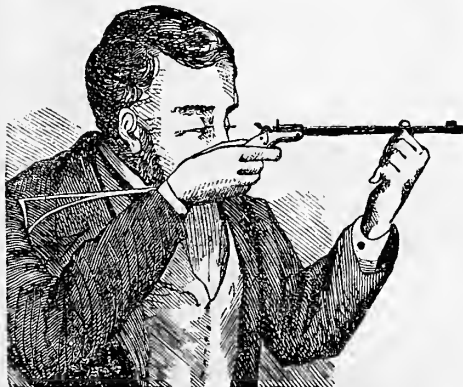
ing perfect fit around the ankle, making an easy-fitting, water-tight, durable shoe, especially adapted for the use of hunters, infantry, and pedestrians generally. Price, \$7. Manufactured by THOMSON & SONS, 301



Broadway, New York. Ten subscriptions, at \$1.50 each will secure a pair of these Hunting Shoes. Carriage to be paid by receiver. Send shoemaker's measure with order.

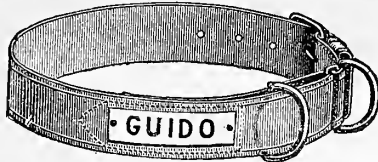
great vigor and superior qualities, commend it to universal trial. [See engraving]. Four subscriptions, at \$1.50 each, will secure **three pounds** sent post-paid.

No. 90.—Breech-loading Pocket Rifle.—(See Engraving.)—This remarkable little fire arm weighs only eleven ounces, yet shoots with great accuracy and power from 30 to 100 yards, or more, and



can be loaded and fired five times a minute. It can be carried inside the vest, and is accompanied by an extension breech, and it may be used either as a pistol or

No. 99.—Dog Collar.—Combination slip and straight Collar, made of heavy bridle leather, with nickel-plated buckle, D's, and name plate. Impossible



for dogs to slip this collar, as it tightens with pulling, and loosens as soon as the strain is off. Price, \$1. Same makers as No. 97. Three subscriptions, at \$1.50 each, will secure this free and sent pre-paid.

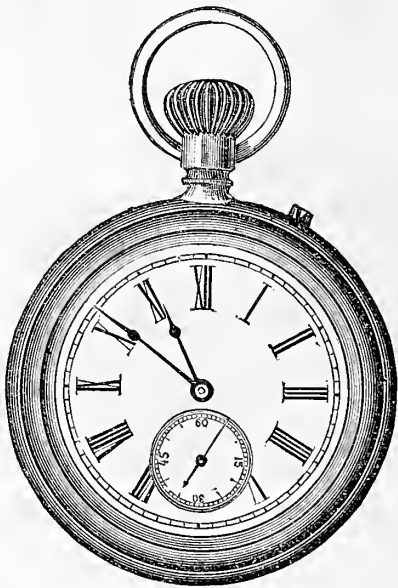
No. 100.—The Great Dictionary.—WORCESTER'S LARGE PICTORIAL UNABRIDGED EDITION, containing 1854 three-column pages, with a multitude of illustrative engravings. (The work is a large quarto volume.) Most of the thoroughly educated men of the country consider this as by far the best Dictionary in the English Language. It gives the spelling and pronunciation of every word in the language with full explanations, and as a source of general information stands next to a Cyclopaedia. The Dictionary can be called for at our office, or be sent anywhere by express or otherwise. It should be in every family. Let a multitude of Boys, and Young Men, each get 15 subscribers, at \$1.50 each, and each secure this invaluable work. A great many have done so in the past. It is worth trying for all winter; but you can get subscribers enough this month to obtain it free. It is published by Messrs. J. B. LIPPINCOTT & Co., Philadelphia.—[We will supply one of these Dictionaries for \$10.00.] Receiver to pay expressage.

Nos. 101 to 104.—A MOST VALUABLE COLLECTION, giving in 22 Large Volumes, a vast amount of most Useful and Practical Information, collected during 22 years by a great number of active, earnest, intelligent, practical Men and Women, and illustrated with many thousands of beautiful, pleasing, and instructive Engravings, that have cost nearly Two Hundred Thousand Dollars. These Volumes are alone a large and valuable Library, containing more varied information on all matters pertaining to the Household, the Garden, the Farm, and kindred Subjects, than can be found in books that would cost five times the price of these. Each of these 22 Volumes has a full Alphabetical Table of Contents, for readily referring to any article or subject in the Volume. The Volumes are newly printed, from the Original Electrotype Plates, from time to time as wanted. They are neatly bound in uniform style, with gilt title, etc.; they are very convenient, and finely adorn the Book-Case or Table. These Volumes cost \$2.30 each, sent pre-paid through by Mail or Express. Those obtaining less than the 22 Volumes, can select any Volumes desired from XVI to XXXVII.—See Table, page 439, for number of subscribers required to get one or more Volumes free.

Most Important Premiums of All.
Nos. 105 to 108.—BOOKS—Choice Books, for the Farm, the Garden, the Household, on Architecture, and Other Subjects. Premiums 105 to 107 are for specific amounts, which may be selected by the recipient from the list, that is frequently published in the advertising columns of the *American Agriculturist*,* in amounts of \$10, \$15, \$20, etc., as noted in the Table of Premiums. The Books will all be forwarded to the recipient paid through by Post or Express, to any place within the United States or Territories, and to the farthest point on our border, when to be sent out of the United States.—N. B.—Here is an opportunity, not only for individuals to obtain good books for themselves and families, free, but also for the Farmers of a neighborhood to unite their efforts in raising a club of subscribers, and through these premiums get an Agricultural Library for the general use of all. Let some enterprising, public-spirited farmer in every neighborhood start this matter, ask his neighbors to help make up a list, and thousands of snub Libraries will be established all over the country, which, with the copies of the *Agriculturist* thus scattered, will have a wonderful influence in developing thought, increasing intelligence and awakening inquiry, and the increased profit resulting will be beyond estimate.—Premium 108 does not limit the amount of books, but any one, sending 20 or more names, may select any Books from our advertised List to the amount of 10 cts. for each subscriber sent at \$1 a year; or 30 cts. for each name sent at \$1.20 a year; or 60 cts. worth for each name sent at \$1.50 a year. Premium 108 is only offered for clubs of 20 or more. The Books for all the Premiums, 105 to 108 inclusive, will be sent post-paid.

* Descriptive Book List sent free on application.

No. 109.—An Excellent Watch.—(Offer limited to Supply.) This remarkably good watch is a Stem-Winder, and Stem-Setter, needs no key, and no opening to admit dust or dampness. A dozen of them have been carried for weeks and months by Editors and employees in the *American Agriculturist* Office, with great satisfaction. The dial is clear, with second-hand, is covered with strong, flat crystal with the new beveled edges. The case is strong, good-looking, heavily plated with nickel, which is not easily distinguished from silver, while it is harder, and not tarnished like silver by gases or sulphur vapors from the skin. For looks and wear, for use, these cases are superior to pure silver.—The works are well made, as proved by the accuracy of the watch. The watch weighs 4 3/4 ounces. (For full description, see *American Agriculturist* for September 1878, page 354.) This watch will be presented to any one sending 16 subscribers, at \$1.50 a year, or 30 subscribers, at



\$1.25 a year. Or it will be sent on receipt of \$10. It will be packed in a strong wooden box. Expressage to be paid by receiver. N. B.—We retain the right to withdraw this premium at any time, if the supply fails. Those wishing to secure it positively, can send on the pay for the 16 subscribers (\$24), and receive the Watch now, and forward the subscribers as secured afterwards.

An Open Secret.
How can Valuable Premiums be given, with the New, Reduced Subscription Rates?

ANSWER:—Readers of the *American Agriculturist* are only asked to pay for the actual cost of making and mailing the paper to them—not all of that even. Some good advertisements (only) are inserted in the paper for the three-fold purpose, of furnishing reliable business information to the readers, of supplying the deficiency in the cost of the paper not met by subscription money, and for a reasonable business income to the proprietors.

Increased Circulation brings more advertising receipts. So the Publishers pay, out of the advertising receipts, premiums to those who assist in keeping up and increasing the number of subscribers.—More circulation also brings more readers to be benefited by the paper, and that, of course, is gratifying to the Editors.

Instead of Cash premiums, the Publishers arrange to supply good, useful, desirable articles, which they buy in large quantities, at the lowest wholesale cash rates, and pay for in part by advertising. In this way they can give much larger premiums than they could in cash, while the articles are just as valuable as money to those receiving them, even more so, as they are sure of being reliable.

DID IT PAY?—A True Story.
Thirty-five years ago, two brothers settled on adjoining farms, with equal advantage as to soil, markets, capital, etc. One of them subscribed for the *AMERICAN AGRICULTURIST*, and now and then bought a Book or two about his own business—the whole costing an average of \$6 a year. His boys read and thought about their work, became interested in and respected it, and were happy in their toil, because they had something to think about. They grew up intelligent, and settled as good, prosperous farmers, respected and influential.... The other brother (partly influenced by an economical wife) "couldn't afford papers and books" (he could afford 6 cents a day, or \$20 a year, for tobacco,

beer, etc.) His boys worked sullenly by day, and "sky-larked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parental restraint, they quit the farm, one for this, and another for that, and none of them have ever amounted to anything. He is himself a sullen, dispirited man. Six dollars a year, or even \$2 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have paid?—Reader, choose the better way. Get your neighbors to join you, and secure some books for the use of all, through Premiums 105-108. (See 1st column.)

Everybody's Paper.
For City...Village...Country;
For Men...Women...Children;
THE
American Agriculturist,
so-called because started 37 years ago as a Rural Journal—(whence its name)—but it has been frequently extended, in size and scope, without change of name, until it is NOW a very Large ILLUSTRATED FAMILY JOURNAL.
A large force of the most intelligent, practical Men and Women, constantly furnish to its pages Useful Information, thoroughly Reliable and Highly Instructive. Beautifully Printed on fine, strong paper.
Each Volume Contains 600 to 700 Fine Original Engravings, which are Pleasing and Instructive.
The whole reading pages are packed with carefully prepared information on a great variety of subjects. Over \$20,000 a year are expended in preparing the matter for this Journal before it goes to the printer. The paper is full of Good Things.
No one can Read this Journal without getting many Useful Hints and Suggestions that will each in the end repay Many Times its Cost.
An Immense Circulation divides the cost of preparation, engraving, and general expense among so great a number, that this Journal is supplied at just about the cost of printing paper and mailing. Taking into account its size, beauty, and value, it is by far the Cheapest Journal in the World.

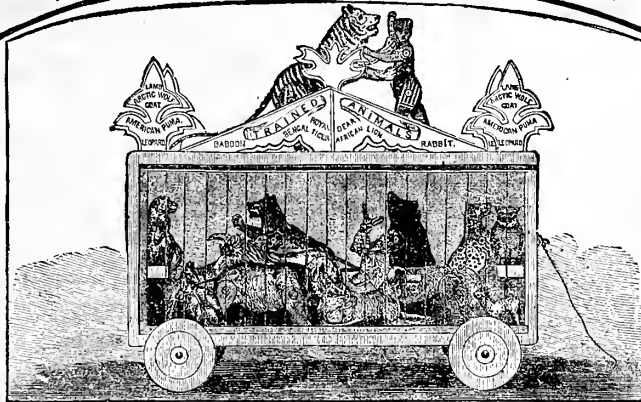
In English and German.—Now, as for 21 years past, the *American Agriculturist* is issued in separate English and German Editions, both similar, and each supplied at the same rates.

TERMS. (Reduced.) [ALL POST FREE.]
One (or 2) Subscribers One Year.... \$1.50 each.
Four Subscribers One Year, \$5, or \$1.25 each.
Single Numbers sent, postpaid, for 15 cents each.
Specimen numbers for examination sent, postpaid, for 10 cents each.... Subscriptions can begin at any time.
The Above Terms are for the United States and Territories, and British America. Add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, except to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is \$3.00 per year, to cover extra postage, and Single Numbers, 17 cents, post-paid.... Remittances, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss.

ORANGE JUDD COMPANY, Publishers,
245 Broadway, New York.

CRANDALL'S

HAPPY FAMILY



Selected from the Four Quarters of the Globe!

FROM THE JUNGLE! THE PLAIN! THE MOUNTAIN! THE RIVER!

The Whole Company on Wheels!

A TRAVELING SHOW

Which is popular everywhere, both with Boys and Girls, for whom it was specially prepared, and with their fathers and mothers, and all other friends.

The fifteen Animals, with their Keeper, are well-made strong, durable, and wonderfully true to nature. They can be arranged in an endless variety of positions and combinations, producing the most varied and startling effects. When not in use, they can all be packed away in the box, which is neat and strong.

When the Wheels alone are adjusted, the owner has a nice Wagon; when the ornaments are placed in position, a beautiful Cage, or Traveling Show; and when the Animals are added to this, and set up as any wide-awake child can arrange them, the effect is *stupendous!*

Price \$2; Expressage to be paid by receiver.
For Sale by Toy Dealers generally.

Orange Judd Company,
SOLE GENERAL AGENTS,
245 Broadway, New York.

A Toy so complete, or so comprehensive of the wants and tastes of Childhood, as this, has never been offered. It is not only a "Happy Family" itself, but it carries the spirit of happiness into every family where it goes, filling the heart of its fortunate young possessor with delight.



The Keeper.



A New Acquaintance.



See Up!



Did You Speak?



Don't You Wish You Had Him?



This Tiger comes straight from Bengal. He was caught in a sort of girdle. He opens his jaws. And shows his great claws. This royal old Tiger of Bengal.



This is an old Bear to be dreaded. He is shaggy and fat. Not hungry, for all that. This famous old Bear to be dreaded.



And this is the Wolf always roving. That sometimes is dressed in sheep's clothing. He devours the lambs. And frightens their dams. Does this sneaking old Wolf frighten?



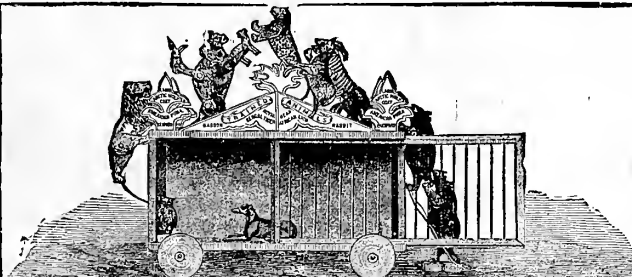
And this is the Greyhound so speedy. By his looks you might think he was needy. But although he is gaunt. He is for above most. This true worthy Greyhound so speedy.



And this is the Owl that is scared. His claws by all acrimin are feared. When the nightfall is nigh. This worthy Owl is scared.

**CRANDALL'S
HAPPY
FAMILY.**

**GREATEST
SHOW
IN THE
WORLD.**



OUT FOR A FROLIC. WHO LEFT THE BARS OPEN!



In Abyssinia there lived this Baboon; They caught him one day before noon. He will eat nuts or corn. From evening till morn. This voracious Abyssinian Baboon.



This Rhinoceros' home is Kaffraria. Who never was afraid of malaria. His hide is like leather. And he's fond of warm weather. This clumsy old beast of Kaffraria.



And this is the Goat of the village. The neighboring garden he'll pillage. He is rugged and tough. But he's a Chimpanzee. This inexpressible Goat of the village.



And this is the Lamb of tradition. He once into school gained admission. But he's a Chimpanzee. This frisky young Lamb of tradition.



Now, here's the "Beginning of Man." According to Darwin's new plan. As you every one can see. What about this "beginning of man?"



And this is the Rabbit so funny. The boys always nick-name him Bun. His tail it is short. And his ears they are not. This plump little Rabbit so funny.



This is the Lion so majestic. And close to your mamma you'd best stick. He is the King of the Beasts. And proud of their teeth. This terrible Lion majestic.



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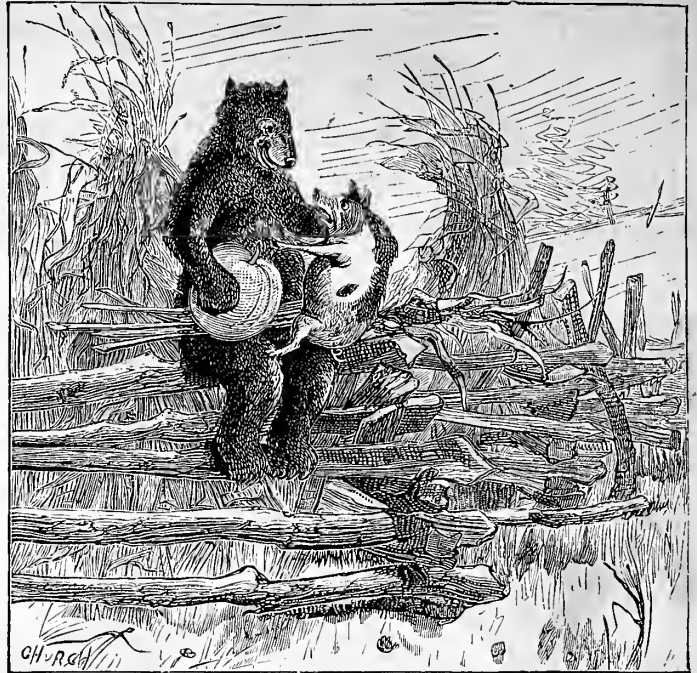
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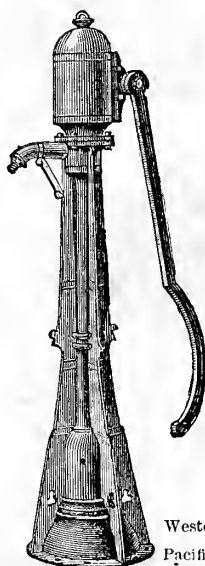
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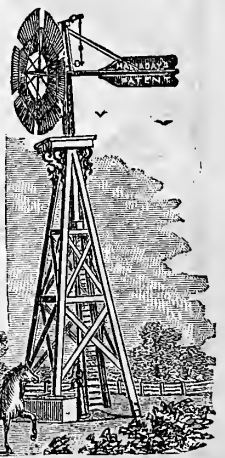
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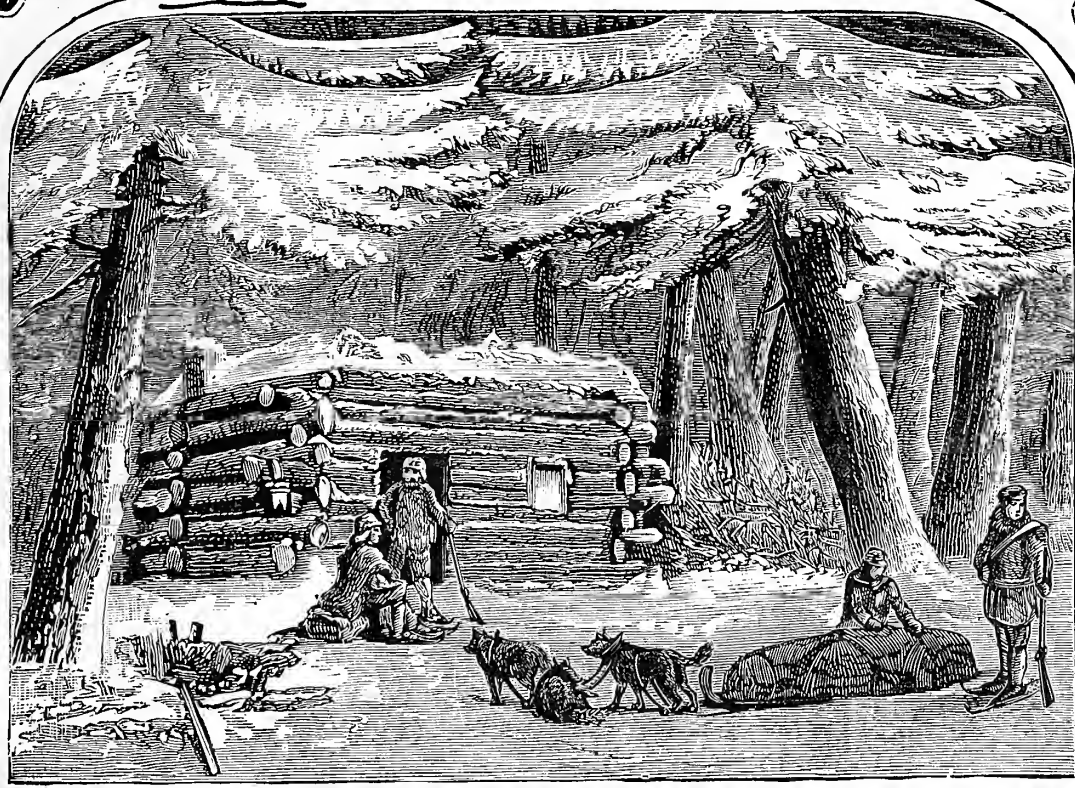
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AGRICULTURIST

FOR THE FARM, GARDEN & HOUSEHOLD.

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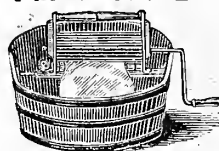
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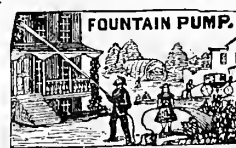
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NEW YORK, DECEMBER, 1878.

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Calendar for the Month.

Day of Month.	Day of Week.	Boston, N. York State, Michi- gan, Wiscon- sin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Ken- tucky, Missou- ri, and Cali- fornia.		
		Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.
1	S	7 10	4 29	morn	7 10	4 33	morn	7 10	4 33	morn
2	M	7 11	4 28	0 8	7 11	4 33	0 9	7 11	4 33	0 10
3	T	7 12	4 28	1 8	7 12	4 33	1 8	7 12	4 33	1 8
4	W	7 13	4 28	2 8	7 13	4 33	2 8	7 13	4 33	2 6
5	T	7 14	4 28	3 10	7 14	4 33	3 8	7 14	4 33	3 5
6	F	7 15	4 27	4 13	7 15	4 33	4 9	7 15	4 33	4 6
7	T	7 16	4 27	5 17	7 16	4 33	5 12	7 16	4 33	5 7
8	W	7 17	4 27	6 20	7 17	4 33	6 14	7 17	4 33	6 9
9	T	7 18	4 27	7 23	7 18	4 33	7 17	7 18	4 33	7 17
10	F	7 19	4 27	8 26	7 19	4 33	8 19	7 19	4 33	8 17
11	W	7 20	4 27	9 29	7 20	4 33	9 22	7 20	4 33	9 21
12	T	7 21	4 28	10 32	7 21	4 33	10 25	7 21	4 33	10 25
13	F	7 22	4 28	11 35	7 22	4 33	11 28	7 22	4 33	11 28
14	W	7 23	4 28	12 38	7 23	4 33	12 31	7 23	4 33	12 31
15	T	7 24	4 29	1 41	7 24	4 33	1 4	7 24	4 33	1 4
16	F	7 25	4 29	2 44	7 25	4 33	2 7	7 25	4 33	2 7
17	T	7 26	4 29	3 47	7 26	4 33	3 10	7 26	4 33	3 10
18	W	7 27	4 29	4 50	7 27	4 33	4 13	7 27	4 33	4 13
19	T	7 28	4 30	5 53	7 28	4 33	5 16	7 28	4 33	5 16
20	F	7 29	4 30	6 56	7 29	4 33	6 19	7 29	4 33	6 19
21	W	7 30	4 30	7 59	7 30	4 33	7 22	7 30	4 33	7 22
22	T	7 31	4 31	9 0	7 31	4 33	8 25	7 31	4 33	8 25
23	F	7 32	4 31	10 0	7 32	4 33	9 28	7 32	4 33	9 28
24	T	7 33	4 32	11 0	7 33	4 33	10 31	7 33	4 33	10 31
25	F	7 34	4 32	12 0	7 34	4 33	11 34	7 34	4 33	11 34
26	T	7 35	4 33	1 0	7 35	4 33	12 37	7 35	4 33	12 37
27	W	7 36	4 33	2 0	7 36	4 33	1 40	7 36	4 33	1 40
28	T	7 37	4 34	3 0	7 37	4 33	2 43	7 37	4 33	2 43
29	F	7 38	4 34	4 0	7 38	4 33	3 46	7 38	4 33	3 46
30	W	7 39	4 35	5 0	7 39	4 33	4 49	7 39	4 33	4 49
31	T	7 40	4 35	6 0	7 40	4 33	5 52	7 40	4 33	5 52

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Will Our Friends PLEASE OBLIGE US TO-DAY?

[When subscription letters arrive, one of the Proprietors opens them, carefully examines the enclosures, marks on each the amount enclosed, numbers each letter, puts the same number upon the checks, money orders, or other documents, and files the letter. Our most experienced careful clerks afterward examine the letters thoroughly, see exactly what is desired, enter the names in the Register for the day, with the letter number against each, the amount paid, the time paid for, each sender's name, gives him credit in another book for any names designed for a premium, etc., etc., and these letters are then filed away by number for reference, years after if need be. The Register Book of to-day (there is one for each week day) is on the next day taken by another clerk, who distributes the names through the State Mail Books, where they are arranged under the several Post Offices, and these are Indexed Alphabetically. Other clerks take these mail books and write wrappers for mailing the papers. Sundry checks are provided for ascertaining that every name and the amount paid, the time, etc., shall be entered. When we know a subscriber's P. O. and State, it is at once found from the Alphabetical Index, and then traced by page numbers, and letter numbers, to the Register Book, and, if necessary, to the original letter. When wrappers are written they are counted for each P. O. and called over and checked, to prevent any omissions. If any papers are lost, it is during transmission or delivery in the mail. All this system is convenient, even necessary to prevent any errors.]

NOW THEN,

the above indicates the amount of work required to enter 80,000 to 100,000 names, and get the papers on the way all right and promptly; and why we desire to have the work done by experienced, tried clerks, without the aid of extra men about Jan. 1st. It will Oblige us Greatly if as many as possible of our Readers will to-day (that is, when this paper comes to hand), send in their own renewals, and the names of the new friends who will come with them to enjoy, and be profited, we trust, by what we shall set before them during the coming year. Our plans are large; we are sure that these pages will give many items of information which it will pay every reader to have.

N. B.—At the bottom of page 488 will be found a convenient form for use in remitting subscriptions. It can be cut off without marring the rest of the paper, and will save the trouble of writing a formal letter. Our printing paper is sized and calendered the same as writing paper, so that it will carry ink writing.

The Holidays are Coming, and a good many can cheaply obtain fine articles, to surprise their friends with, by collecting a few names of subscribers, and forwarding them in ample time to have the premium article on hand before Christmas or New Year's. The earlier it is done now, the better, before the rush upon manufacturers and dealers, and the crowd upon the express and freight lines, may chance to cause any vexatious delays.

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Pleasant Announcement.

A Magnificent Steel Plate, Line
ENGRAVING,MARSHALL'S GREAT WORK,
THE

Farmer's Pride,

For Every Subscriber to

American Agriculturist for 1879.

Fine Pictures add greatly to the attractiveness and cheerfulness of every home, however lowly it may be. More than 250,000 excellent Chromos, almost equal to Oil Paintings, such as the "Strawberry Girl," "Mischief Brewing," etc., now adorn the dwellings of the readers of the *American Agriculturist*, to whom they were sent exclusively. These are vastly superior to the cheap, dauby pictures subsequently scattered through the country, and which led us to cease distributing Chromos altogether.

We are happy to announce, however, that we have now completed arrangements for supplying all the bona-fide subscribers of the *American Agriculturist* for 1879 with Marshall's *Superb Steel Plate, Line Engraving*, entitled "THE FARMER'S PRIDE." Mr. Marshall's great portraits of Washington, Lincoln, and others, have achieved for him a WORLD WIDE REPUTATION.

The eminent French artist, Gustave Doré, styles him "the Master of Art in America," and European critics have united in pronouncing his portrait of Mr. Lincoln the *finest specimen of lineal art produced in this century*. Mr. Marshall regards this last work, "The Farmer's Pride," equal to any of his previous efforts, and it will unquestionably be so regarded by judges. The cost for engraving a steel plate ranges from One Hundred Dollars upward, according to the artistic execution, fineness, and size. Mr. Marshall receives

Three Thousand Dollars

for engraving this picture, which of itself indicates the excellence and value of the work.

The usual price of steel-plate line engravings of the size and character of "The Farmer's Pride," is **Ten Dollars**. To other than subscribers, we will supply the picture, postage prepaid, for **Five Dollars**. To all bona-fide subscribers of the *American Agriculturist* for 1879, however, we will supply the picture at our office, together with the Paper, one year, post-paid, for **\$1.63**, or **\$1.70** when the picture is forwarded by mail, securely rolled and protected in a mailing-tube, free of any extra charge.

That is to say, we will send the *American Agriculturist* for 1879 to bona-fide subscribers, together with Marshall's elegant Steel Plate, Line Engraving, "The Farmer's Pride" (price \$5.00), for **\$1.70**, all postage prepaid.

OR,

When the engraving is delivered at our office, 245 Broadway, we will furnish the paper and the engraving for **\$1.63**, postage for the year prepaid on the paper. We make this

EXTRAORDINARY OFFER,

because of our desire to place this beautiful picture in the homes of all our subscribers, and at the

same time to increase the number of these subscribers for 1879 to a round

TWO HUNDRED THOUSAND.

We are enabled to afford our readers this unparalleled opportunity for obtaining a master work of art, through our having sole possession of the plate, and our unequalled facilities for issuing the large number required.

Though the *American Agriculturist* at the reduced price (\$1.50 per annum), is cheaper than any similar journal in the world, and richly worth treble the price of the subscription, we cheerfully supply this magnificent engraving at a great expense to ourselves, believing that we shall be recompensed for so doing in the satisfaction afforded, and in the increased interest and efforts for the paper, of those subscribers who share in the distribution.

"THE FARMER'S PRIDE"

is executed in the highest style of art on fine plate-paper, Twenty-Two Inches by Twenty-Eight Inches. Some idea of the estimation in which the artist and the picture are held, may be had from the fact that thirty artist proofs of the engraving we offer, with the signature of the Artist, have been subscribed for at **Twenty-five Dollars each**.

RECAPITULATION.

The *American Agriculturist* for 1879 postage prepaid, (14c. extra in New York City). **\$1.50**

"The FARMER'S PRIDE" to other than Subscribers (postage prepaid)..... **\$5.00**

The *American Agriculturist* and "THE FARMER'S PRIDE" to one address, (postage prepaid on both)..... **\$1.70**

The two, when the picture is delivered at our office, 245 Broadway,..... **\$1.63**

No person other than a Subscriber can procure this picture at less than \$5.00. It is now on exhibition at the reception rooms of the *American Agriculturist*, 245 Broadway.

The Engravings will be issued as rapidly as possible, and subscribers will be supplied in the order of their application.

The Steel-Plate to Subscribers in Clubs.

To accommodate our subscribers who have already sent in their names in clubs, at club rates, and those who may hereafter do so, we subjoin the following offers:

Four Subscribers for 1879, and Four Engravings, all post-paid, for..... **\$5.80**

Six Subscribers for 1879, and Six Engravings, all post-paid, for..... **8.20**

Ten Subscribers for 1879, and Ten Engravings, all post-paid, for..... **12.00**

To Clubs of Ten Subscribers, post-paid, and Ten Engravings taken at the Office, or forwarded by Express in one package, expressage unpaid..... **\$11.80**

Clubs above Ten at the same proportionate rates.

The Steel-Plate Engravings for

Premium Clubs.—The above offer of Engravings will in no way interfere with the General Premium List, but all subscribers, from whatever source received, will have equal privileges. For particulars, see page 481.

A NEW PREMIUM—Or a Pocket Revolver, Cheap.

—So many write us for good, low-priced revolvers, that we have arranged to supply those who specially want them, thus: 1st—A very good, steel-barrel and lock, nickel-plated, 7-shooter Revolver, Calibre 22-100. Made at the celebrated Remington Arms Works, weight 7 ounces. It is as good as any made for anything like the money, and good enough for anybody who wants such an implement. We have just fired one 100 times, and found it work very well. It will be sent free to any part of the United States, post-paid, by mail, to any one sending only 5 subscribers to the *American Agriculturist*, at \$1.50 a year, or 10 subscribers at the 4-club rate of \$1.25 a year. [Or it will be delivered free as above, on receipt of \$2.50. It is as good for use as any \$5 or \$10 revolver of like calibre.] 2d.—A larger 5-shooter Revolver, nickel-plated, calibre 32-100, weight

11 ounces will be presented for 7 subscribers, at \$1.50 each, or 12 at \$1.25 each, delivered free, as above. [Or it will be forwarded free, as above, on receipt of \$4.]

A PREMIUM AVAILABLE
to Nearly Every Subscriber.

Except in some small places, where nearly everybody already takes this paper, there are very few of our readers who do not each know at least two others who would be profited by the perusal of such a paper, and who would take it if its merits were explained to them. The Table, page 481, names 20 desirable articles, one of which will be presented to any one sending his own and two other subscriptions at \$1.50 each a year. It is very easy for a multitude of people to each make up a larger list and get a more costly Premium. The articles are described and illustrated in the November number. A separate Illustrated Descriptive Sheet will be sent to any one desiring it.

An Important Enterprise Proposed.

The Best Possible Investment of a small sum that can be made by the farmers of any neighborhood, is to secure a few good books, and pass them around from one to another during this and the next three months, until all have read them. We firmly believe that \$10 to \$20 thus invested, amounting to but a trifle each, if a considerable number unite, will, in the end, be worth many hundreds, if not thousands of dollars, to that neighborhood. It only needs some public-spirited man, young or old, to take hold as a leader in the enterprise, and it will be quickly consummated.—Better still, to unite in forming a club of subscribers large enough to secure a number of volumes free. Thus: Fifteen persons clubbing together and paying only \$1.50 apiece, will not only each have the *American Agriculturist* post-paid for a year, but they will also receive, delivered free, **\$10.00** worth of good books, which all can read in turn. Twenty persons get **\$15.00** worth of books; Twenty-six persons thus uniting, will get **\$20.00** worth of books, or quite a library. By this arrangement, each member of the club will, by the payment of \$1.50, not only have the paper all the year, but a joint ownership in \$20.00 worth of valuable books, and a perpetual right to use them. One of the club may be appointed as keeper, or librarian, to take charge of the books, and give them out as desired. There ought to be 50,000 such library clubs in as many different neighborhoods, this very winter, this month even. Who will be the first enterprising, public-spirited man in each place to start such an enterprise?—Here are some

BOOKS TO SELECT FROM.—These may be of many kinds for the above. We suggest the following as making up a good assortment to start with: Allen's New American Farm Book, \$2.50; Barry's Fruit Garden, \$2.50; Henderson's Gardening for Profit, \$1.50; Stewart's Irrigation, \$1.50; Thomas' Farm Implements, 1.50; Tim. Bunkers' Papers, or Yankee Farming, \$1.50; Johnson's Winter Greenhouses at Home, \$1.00; Dadd's American Reformed Horse Book, \$2.50, or, Dadd's Horse Doctor, \$1.50; Herbert's Hints to Horse-Keepers, \$1.75; The Percheron Horse, \$1.00; Coburn's Swine Husbandry, \$1.75; Harris on the Pig, \$1.50; Dadd's Cattle Doctor, \$1.50; Stewart's Shepherd's Manual, \$1.50; Wright's Practical Poultry-Keeper, \$2.00; Reed's House-Plans for Everybody, \$1.50; Harris's Talks on Manures, \$1.50; Quinby's Mysteries of Bee-Keeping, \$1.50. All the above books would cost only \$30.00, if purchased, or nothing but a little effort, if obtained by a club; but any portion of them can be used in the start, and there are many others that may be preferred for a particular purpose in any locality.

A "Baker's Dozen" for 10 Days.—To all new subscribers for 1879, received prior to December 10, we will send this number without extra charge; this is 13 months for the price of 12.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members: or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and \$7, may afterwards send 4 names more and \$3, making 10 subscribers for \$10.00; and so for the various other club rates.

American AGRICULTURIST.

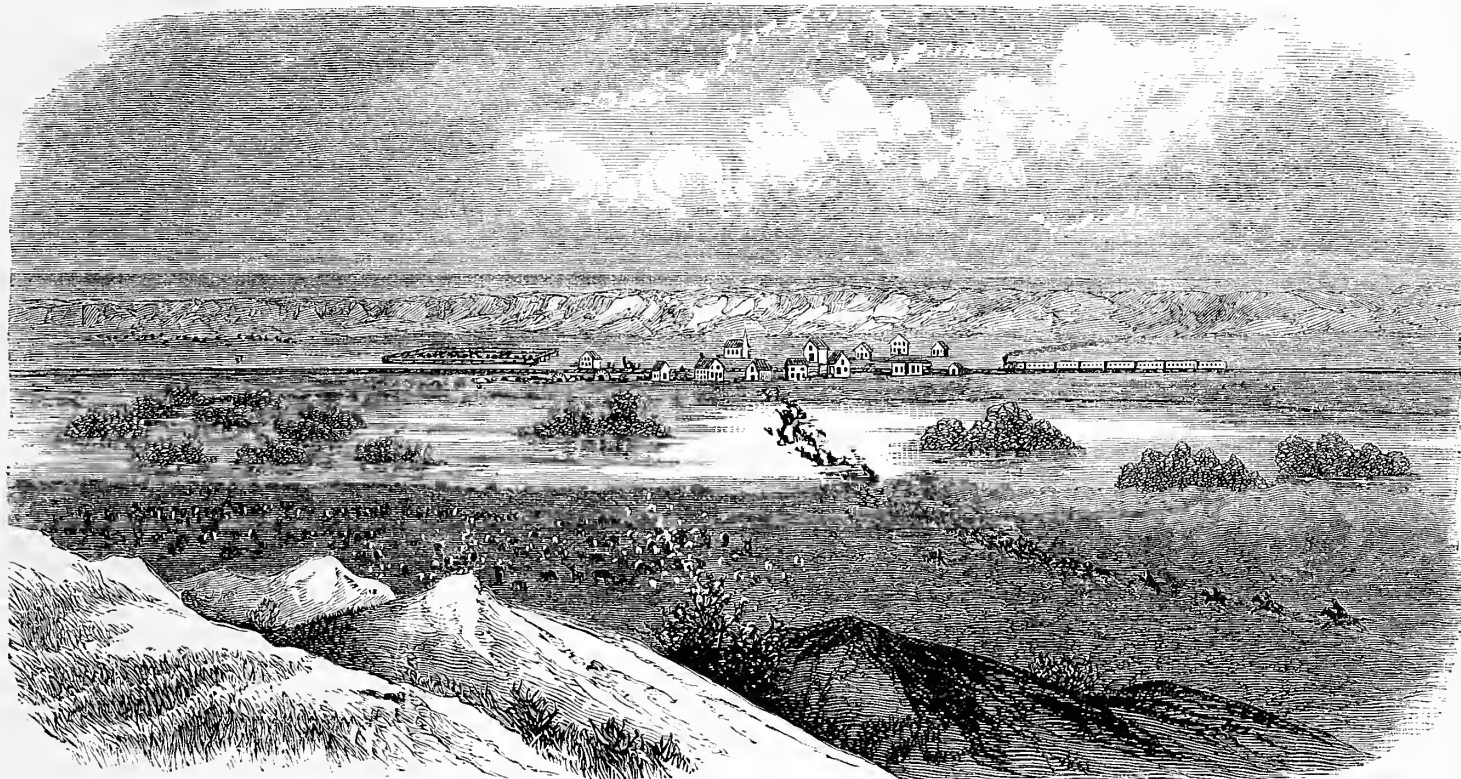
NEW YORK, DECEMBER, 1878.

The Texas Cattle Drive.

Ogalalla, Nebraska, the terminus of the Texas Cattle Drive, is located on the Union Pacific Railroad, 342 miles west of Omaha. The place has figured considerably in the newspapers during the autumn, as being the point where the Cheyenne Indians (escaping from the reservation in the Indian Territory) crossed the South Platte River and ultimately secured their freedom. The first house at Ogalalla was built in 1870, and though there are now not more than twenty buildings, all told, the place, during the cattle season, is full of bustle and excitement. The first drove of cattle from Texas reached here in 1874. Prior to that time they were driven to Fort Kearney, 154 miles further east on the

ing it. The cattle brought from the southern portion of Texas, travel some seventeen hundred miles, and those from the northern part of that State, about thirteen hundred miles. It takes an even five months to make the journey from the southern part of Texas, and from three and one-half to four months for that from the northern part of the State. There have been cases of forced driving, where the cattle have come through in ninety days. A forced drive is made when the owner of the herd finds a better market at Ogalalla than he anticipated, and sells more cattle than he has ordered to come up; in such a case he orders, through his agent in Northern Texas, a fresh lot to come on as quickly as possible. The proprietors or principals generally buy the cattle in Texas on time, paying from \$3.00 to \$4.00 a head, down; they receive cash for them at Ogalalla, and settle up with the original owners when they return to Texas. They purchase in Texas a cow, for example, for \$8.00, and the calf is thrown in; the animals are kept on pasture lands, at little or no expense, until spring, when the herd is made up for the north. Upon reaching Ogalalla the cow brings \$12.00 and

ble portion of their wages with the Spanish Monte and Faro dealers. It very frequently happens that they do not have enough money left to pay their way back to Texas by ears, and are therefore compelled to mortgage their next season's wages! After reaching the extended valley of the Platte, opposite Ogalalla, the cattle, while waiting to be sold and delivered on the north bank of the river, graze up and down the south side of the Platte over an area forty miles long and from one and a half to four miles wide. At one time this year (July 21st) there were fifty-five thousand head of cattle grazing in this valley. There is a space left between the herds a quarter of a mile or more wide, which the cow-boys utilize for camping purposes, they remaining on this side of the Platte until the cattle are sold. Calves born on the road are invariably shot, and mothers are generally roped with steers or cows that have not calved, for if this were not done they would manage to slip away in the night and return to the spot where their offspring were shot. Buyers who live a long distance away, shoot the calves born at Ogalalla, as they do not care to drive them over the long distance to their ranches.



VIEW OF OGALALLA, ON THE PLATTE RIVER, NEBRASKA, THE TERMINUS OF THE TEXAS CATTLE DRIVE.

Union Pacific Railroad. As the country around Kearney became settled, a new terminus had to be selected, and Ogalalla was decided upon because of its geographical advantages. The cattle could no longer be driven to any point eastward without encountering improved lands, and it was not feasible to drive them to any point west of Ogalalla, owing to the difficulty they would experience in procuring water en route. Between Ogalalla and Buffalo Station, on the Kansas and Pacific Road, from which point the cattle drive leads northward, there are nearly a dozen streams or rivers about far enough apart to make convenient watering stations for the cattle. These streams embrace the Saline, South Fork of the Solomon, Prairie-dog, South Sappa, North Sappa, Beaver Creek, Driftwood, Republican, Freuchman, and the White Men's Fork. The distance between these rivers is about twelve miles, which is a fair day's drive, but the distance from the last river to Ogalalla, on the Platte, is about thirty miles. On account of absence of water between the latter points, the drive is generally made in the cool of the day, or in the nighttime, the cattle being watered at the last moment before they are started on this long drive to the South Platte. The whole distance from Buffalo Station to Ogalalla is 145 miles, and about twelve days are usually consumed in mak-

ing the calf from \$7.00 to \$8.00. Owners rarely accompany their stock, but reach Ogalalla by railroad several weeks before the cattle arrive, in order to make bargains, etc. Thus the owners frequently have their herds sold before their arrival.

The herds leave Texas in the early part of February, generally numbering from one thousand to thirty-five hundred head of cattle, and requiring from eight to ten men to manage them. These herders receive \$30.00 a month, and also \$50.00 extra upon reaching Ogalalla to defray their expenses back to Texas. There is a head herder, who exercises authority over the others, and who is universally known as the "Corporell." Mess wagons for the herders are fitted out by the proprietors. They generally take with them from thirty to forty horses, to meet the wants of the long drive, and often purchase or trade for others on speculation *en route*, to be sold at an advance at Ogalalla. All the horses are sold when the cattle are delivered at the end of the drive. As fast as the owner disposes of the cattle, and the cow-boys can be spared, he pays them off, when they at once proceed to indulge in what they term "a little amusement." The sharpers and gamblers who have reached Ogalalla from various points, are always ready to accommodate the cow-boys in their search for "amusement," and they are fortunate if they do not leave a considera-

The cattle go to the river for water at noon, with the exception of a few which remain behind to take care of the calves. One cow may often be seen watching twelve or fifteen calves, while their mothers have gone with the remainder of the herd to drink. After the return of the herd the "watchers" take their turn. This interesting fact is vouched for by several old ranchmen.

In 1874, the first year that Ogalalla was made the terminus of the drive, fifty thousand head of cattle reached here. Last year, 1877, eighty thousand arrived. The number of cattle brought here this year and distributed to the ranchmen, is computed at one hundred and twenty thousand. The herds begin to come in about the first of May, and continue to arrive until September. During the present season, the cash prices here have been about as follows: Yearling heifers, \$8; yearling old steers, \$9; two-year old heifers, \$11; two-year old steers, \$13; cows, \$12; three-year old steers, \$16; calves, \$19 to \$20.

After the ranchmen have kept the cattle on their northern ranges for a year or more, they ship them to the Chicago market and make their profit on them. The principal cattlemen engaged in the Texas cattle drive are: Ellison & Dewese, D. R. Fant, Seth Mabry, Captain Littlefield, Millett Bros., and W. G. Butler. There are smaller dealers, making together about twenty-five. Mr. Ellison, who

remains at Ogalalla much of the time, has been the principal dealer or "middle-man," as the bulk of the trade has passed through his hands. The ranchmen have obtained from him any kind of cattle they have desired, and he in turn has purchased of the other dealers, so that the latter may be said to have done their business through him. Major Mabry has likewise done a good deal of business of this kind. There is another Texas drive, that to Fort Dodge on the Atchison, Topeka, and Santa Fe R. R., several hundred miles south of here. Of course it would be a great saving of distance and expense if the proprietors could stop at Fort Dodge, rather than bring their cattle on up to Ogalalla. But they can not find so ready a market for them at Fort Dodge as at Ogalalla, which is easily accessible to the owners of the great cattle ranches in Wyoming, Nebraska, Colorado, etc. It is computed that about seventy thousand cattle were driven to Fort Dodge the present year, and of this number, some twenty thousand remained unsold, and were brought on up to Ogalalla, where they found purchasers. Ogalalla, in addition to being the terminus of the Texas cattle drive, is likewise a shipping point for cattle going to Chicago. After the drive terminates (about the first of September), the shipping business begins, and continues to the first of November. The average expense of getting cattle from Ogalalla to Chicago is \$7.00 per head, which includes railroad charges, yardage, and commission. If the Chicago market is any way satisfactory, the ranchman is able to realize a very fair profit over and above the rice originally paid to the Texan proprietor, and the little expense of maintaining the cattle on his ranch for a year or more. There were about thirteen thousand head of cattle shipped from here to Chicago last year, and the shipments this year will reach eighteen thousand. Julesburg, about 35 miles further west, on the Union Pacific R. R., is another important shipping point. Twenty-two thousand head of cattle were forwarded from there last year. It is computed that the shipments this year will amount to between thirty and forty thousand head. The Iliff Estate, which has been run by contract since the death of Mr. Iliff, by the Snyder Bros., will alone ship over fourteen thousand from Julesburg this year. Some idea of the magnitude of the Iliff shipments may be obtained from the fact that the estate forwards three train loads per week of twenty cars each, and fourteen weeks will be required to complete the shipments. There was a large shipment this year from Cheyenne, about 13 miles west of Julesburg, which is also another important shipping point. The largest shippers this year from Cheyenne have been the Swan Bros., who own in the neighborhood of a dozen different ranches, and who, it is thought, aim to succeed the late Mr. Iliff, as the Cattle Kings of the North West.

Hints for Work.

[The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.]

There is more room for thought in the business of farming now, than ever before. There is more money employed in the business, more machinery is used, and a greater diversity, and a better quality of product is demanded by the consumer.

Plans for management may be discussed in the family, and in gatherings of neighbors. By talking over such matters, and getting the ideas of people of experience, the best, most convenient, and most profitable methods are often found.

Feeding Stock.—Economy and effectiveness, are the main points to observe. The best food, fed in the best way to the best stock, must be the most profitable, and to reach this conclusion is more a matter of care and skill, than of money. Money can procure food, stock, good buildings, and labor; but good management always depends on the intelligent application of known facts to practice.

Making Manure is next in importance to feeding stock. This subject is worthy of careful study, and

every farmer may look to Joseph Harris' new book "Talks on Manures," for many valuable ideas. He will find gathered in it not only the author's practical knowledge, but the pith of most that has been learned and printed on the subject.

Saving Fodder.—There are many fields still dotted with shocks of corn fodder. This season it ripened very thoroughly, and needed but little drying to cure it. It may be safely stacked or stored in barracks this year with less precaution than usual, but to prevent further waste, the stover should be taken care of as soon as possible.

Roots yet unharvested, should be taken up at once, before the frozen ground prevents. Pits not fully protected, should now be made safe by an extra coating of straw and earth. With a foot of straw, 3 inches of earth will be sufficient.

Cabbages are coming into common use as fodder. They may be saved by pitting them in heaps of two or three wagon loads, with sheaves of straw intermingled, and covering with straw and earth, as for roots; or by placing them, roots upturned, upon the ground, in a dry place, and throwing a few inches of earth over the heads. We find that cabbages make excellent food for milking cows.

Turnips may be fed to milking cows, without danger of flavoring the milk disagreeably, by giving them immediately after milking. A root cutter, or some other method of reducing the roots to thin slices or pulp, is worth the cost as a preventive of choking, if for nothing else. A few cut turnips or carrots occasionally are beneficial to horses.

Live Stock require constant watchfulness. To keep them comfortable is as important as to feed them well. No animal will thrive and fatten, if unclean and cold, hence uncomfortable and fretful.

Warmth saves feed, helps fattening, and often prevents sickness, if not the total loss of an animal.

To keep the animals in good condition, or increasing in weight, should be the object of every farmer during the winter season. To permit a loss of weight after the summer's feeding, is to waste the food both winter and summer. It costs more to get an animal fat, than to keep it fat.

Young Animals require particular care; this is the making of the adult animal. To over feed is as unwise as to stint food. Costiveness is perhaps the most to be guarded against at this season; linseed oil-cake meal is a good and cheap preventive. One pint to one quart daily may be given.

Horses at regular work, should be kept in good condition. Two quarts of corn and oat meal, added to a bushel of cut straw, will make it equal to so much hay. This will make a sufficient ration for an idle horse; for a working horse, add 3 quarts of this meal, or 3 quarts of oats at each feed.

Working Oxen are often more useful than horses, and of late have been too much neglected. It should not be forgotten that oxen require more time to feed than horses, and ample opportunity for rumination should be given. During winter, oxen that work upon the road ought to be shod. The cost will be saved in the extra work done, and freedom from injury by slipping.

Young Steers less than a year old, may be broken to the yoke by any patient boy. At first they should be yoked and tied up until they have become used to the yoke, when they may be led around and taught to drive. This is interesting play-work for a farmer's boy in winter.

Sheep.—A run on the stubbles is healthful exercise. A small plot of rape for green feed is always acceptable to the sheep, until the snow is too deep for them to reach it. See that they have plenty of pure fresh water, at least twice a day.

Cows will begin to fail in milk as the weather becomes cold, unless the food is of the best kind. Mangels or sugar beets, pulped and mixed with cut hay, corn stalks, or even straw, and left 24 hours to ferment, are productive of milk; and 2 quarts of corn meal, added to a bushel of this, will greatly help the yield of cream. Brewer's grains in small quantities, are a good food for milk production.

Fattening Animals should be pushed on as rapidly as possible. No fresh food should be given until

the refuse of the previous feeding is cleared from the troughs. When the appetite fails from any cause, a change of food will often restore it.

Plowing of heavy soils may be done to advantage until the ground freezes. It is well to plow under stable manure on such land. Light soils are quite as well if plowed in spring.

Wheat and Rye fields should be freed from surface water, and open drains cleared of leaves and rubbish. Top-dressing with fertilizers or manure, where necessary, should be done without delay.

Sundry matters.—The ice house should be cleaned out and prepared for ice, and a stock of sawdust be procured for packing. . . . The clearing of swamps may be done better a little later; tussocks cut easier when frozen. . . . Swamp muck for use as an absorbent may be dug now, and left to freeze dry ready for use in a few weeks. . . . Roots in cellars should be overhauled occasionally, and decayed ones removed. Cellar windows should be made secure against frost, either by a double sash, or outside protection of shutters. . . . Potatoes that are suspected of rot, may sometimes be saved by sprinkling dry slacked lime over them. Look for, and make all necessary repairs about the out-buildings. At the close of the year make an inventory, and if no accounts have been kept heretofore, it will pay to begin then.

Notes for the Orchard and Garden.

The careful cultivator will have so improved the past favorable autumn, that his work for this year is finished, and he is already looking beyond the slight barrier that separates him from the coming year, and his thoughts are mainly of the future. The Notes of the past few months include whatever of out-door work may be practicable the present month, and as much of what we might say has been anticipated, our Notes are of necessity brief.

Orchard and Nursery.

Not for many years have apples been so abundant as in the present, and as the crop has been short in most parts of Europe, immense quantities have been shipped. But few orchardists can benefit by this foreign demand, as the varieties suited for shipping are limited in number, and those tender fleshed varieties like the Northern Spy, King of Tompkins Co., Yellow Bell-flower, etc., that are so fine for home use, are not in favor with shippers.

Varieties for Europe.—Shippers place the Green Newtown Pippin at the very head of the list, and after that take such hard-fleshed long-keeping kinds as Spitzenberg, Baldwin, etc. It will be well for those who contemplate planting orchards with a view to shipping the fruit, to consider the merits of some of those southern varieties, which have in the Western States proved such great keepers, like the Nickajack, which, though not of high quality, has great beauty and will keep until March.

Fruit in the Cellar.—The great abundance of apples and consequent low prices at the time of harvest, is very likely to lead to neglect in caring for them, and it would not be surprising to find good fruit scarce next spring. There has been, in some localities, premature ripening, and this indicates that the fruit will keep badly. This calls for unusual care in selecting that which is to be stored, and in its management during the winter. The main point to be looked after, is the temperature, which should be kept as low as possible and not freeze the fruit. One great advantage in having a detached fruit cellar, or one not under the dwelling, is that ventilation is not necessary. In the home cellar the carbonic acid given off by the fruit must be carried off, or the family will suffer. In the special cellar this may accumulate, and by excluding the air, greatly promote the keeping of the fruit.

Cions, whether to be used during winter for root-grafting, or to be kept until spring for top-grafting, should be cut early. They are much more likely to succeed than those taken after exposure to severe winter weather. Saw-dust, damp as it comes from the mill, is the best packing material, as it leaves no grit to dull the knives.

Pruning of large branches may be left until the

severity of winter is over, but knife work may be done at any time; young trees may be cut back into shape, and large ones may be trimmed.

Manures.—The orchard is the only part of the farm that is expected to yield two crops, and so long as the practice prevails of taking off a crop of hay or grain in addition to one of fruit, so long shall we have complaints of bitter rot and other evils. Not only should the land be given up to the trees, when of bearing age, but these should be manured, if not every year, at least every third year, not by putting a small heap next to the trunk, but by spreading a good dressing over the whole surface. If the season allows, this may be spread now and turned under by shallow plowing. If the ground is frozen, draw out the manure and leave it until spring.

Various Matters.—Root grafting may be done on stormy days: work upon one variety at a time, to avoid errors; as soon as grafted, place the roots in boxes of earth, correctly label, and keep in a cool cellar until spring.... Destroy the eggs of the Tent Caterpillar if seen on the ends of the twigs.... See last month's Notes about rabbits and mice.

Fruit Garden.

But little is to be done, except to finish up fall work and get into winter quarters as soon as possible.... Unfinished pruning of grape-vines, currants, and gooseberries, may be done in mild days.... Strawberries should have their covering when cold weather fairly sets in. See article on "Winter Protection," p. 471.... The care for winter pears is the same as that for winter apples; when they begin to come into eating condition they are much improved by bringing them, a few at a time, into a warm room to finish off.... If tender raspberries are not yet covered with earth, do it before freezing prevents.... Apply coarse manure around currants, gooseberries, hardy raspberries, and blackberries; in the spring rake off the straw, and fork in the rest.

Kitchen and Market Garden.

The Notes of October and November suggest several things that may be done if the autumn is prolonged into the present month. In many localities the covering of spinach, the care of cabbages, etc., may be safely put off until now.

Cover gradually all crops that are stored out of doors. If celery in trenches is covered at once, there will be loss by decay, or it may be so warm that the plants will start into growth and the stalks become hollow. This, and roots in pits, etc., should have only a few inches of covering at first, to be thicker as the weather gets colder.

Cold Frames will need special attention. It must be remembered that the cabbages, cauliflowers and lettuce stored in these are not to grow, and that to allow them to start into growth will be very sure to ruin all. Only in very cold weather can the sashes be kept closed all day with safety. When the mercury is at 10° in still weather, the sashes must be lifted slightly, or pushed down an inch or two. If at 15° or 20°, more air must be given, and when it is at 30° or above, remove the glass altogether.

Cellars where roots are stored need to be kept cool, else the roots will shrivel or start into growth; in either case their quality will be injured. See what is said last month on covering with earth.

Seeds should be cleaned, properly labeled, and put away in a dry, cool place. Keep no stock concerning which there are doubts as to kind or quality. Some seeds, like the parsnip, are not good the second year, while others, like cucumber, etc., keep good a long time; hence a seed need not always be discarded because it is old. The works on gardening usually state the time that the seed of each vegetable retains its vitality.

Flower Garden and Lawn.

When we see, as we sometimes do, a lawn covered with coarse stable-manure, we are sure that there is trouble, in the way of weeds, in store for the owner. Only the most thoroughly composted manure should be used, and some contend that it is impossible to kill all the weed-seeds, no matter how thoroughly it is fermented. However this may be,

we know that there is no risk in the various artificial manures; if compost is used, apply it now.... Do not forget snow plows, as suggested last month.... Heavy falls of snow may do much damage to trees, especially evergreens; when this lodges in the trees, shake it out before it becomes icy and fixed; deep snow in settling will drag down the lower branches of evergreens, and may break them off; this should be prevented by shoveling it away and freeing the branches.

Greenhouse and Window Plants.

The general rules for the care of house-plants given last month will be timely all winter.

The Temperature is more easily regulated in the greenhouse than in the parlor or living-room. A temperature of 70° in the day-time is sufficient for ordinary greenhouse plants, and this may be 15° or 20° less during the night. With a proper heating arrangement, this is easily managed in the greenhouse, but in rooms it is often exceeded, and as the dryness is in proportion, the plants fare poorly. It would be better for the family if the temperature of the rooms was often governed by the needs of the plants, as they are generally overheated.

Hanging Plants, whether in baskets, or in suspended pots (see page 470), are more apt to become over-dry than others, and need special care. Baskets are best watered by plunging them in a bucket or tub of water, and allowing them to get thoroughly soaked through; of course dripping must cease before they are returned to place.

Chrysanthemums that have bloomed in the house should be cut down, when past their prime, and the pots be placed in the cellar or a pit; in either case they should not become dust-dry.

Plants in Cellars.—A good cellar is an excellent place for storing plants that are used for summer decoration, and as a reserve place for winter plants. Being dormant, they need but very little water, but they should not be allowed to dry out altogether.

Bulbs in Pots, when they have made roots, which may be known by turning out the ball, are to be brought into the greenhouse, or warm room, where they are to flower. It is better to bring forward but a few at a time—say at the interval of a week or so—in order to have a long succession of bloom.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions for the month ending Nov. 13th, 1878, and for the corresponding period last year:

TRANSACTIONS AT THE NEW YORK MARKETS.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 d's last m'th	5,521,000	3,971,000	567,000	1,079,000	1,217,000	2,100,000	1,000,000	1,000,000	1,000,000
26 d's last m'th	4,402,000	7,782,000	5,413,000	605,000	508,000	2,311,000	1,000,000	1,000,000	1,000,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 d's last m'th	5,521,000	6,413,000	4,912,000	531,000	826,000	1,473,000	1,000,000	1,000,000	1,000,000
26 d's last m'th	5,507,000	11,134,000	7,845,000	617,000	312,000	2,314,000	1,000,000	1,000,000	1,000,000

Comparison with same period at this time last year.									
RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.
27 days 1878.	5,521,000	6,413,000	4,912,000	531,000	826,000	1,473,000	1,000,000	1,000,000	1,000,000
26 days 1877.	3,940,000	4,201,000	3,516,000	403,000	1,114,000	1,503,000	1,000,000	1,000,000	1,000,000

Exports from New York, Jan. 1, to Nov. 8.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.	Beans.	Butter.	Other.
78.	3,311,000	47,698,300	24,650,000	3,931,000	1,564,000	3,512,000	362,000	1,410,000	16,881,000
77.	1,410,000	16,881,000	20,734,000	1,915,000	1,391,000	411,000	323,000	1,410,000	16,881,000

Stock of grain in store at New York.									
Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Peas.	Beans.	Butter.	Other.
Nov. 11, 1878.	4,339,387	4,179,584	547,226	880,910	1,306,063	18,057	125,761	1,306,063	18,057
Oct. 7, 1878.	1,763,708	1,485,016	199,918	200,275	1,216,551	125,761	1,216,551	125,761	1,216,551

Tide-water Receipts at Albany, from opening of navigation to Nov. 8.									
Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.	Peas.	Beans.	Butter.
78.	14,690	9,842,300	20,341,700	1,074,000	2,853,700	3,510,500	554,500	1,074,000	2,853,700
77.	27,800	10,689,700	10,221,700	698,800	1,578,700	2,615,200	634,500	698,800	1,578,700

CURRENT WHOLESALE PRICES.

	Oct. 12.	Nov. 13.
PRICE OF GOLD.	101 1-8	100 1-8
Flour—Super to Extra South'n.	\$3 40	\$3 15
.. Super to Extra Western.	3 50	3 25
.. Extra Western.	3 85	3 50
.. Extra Genesee.	3 90	3 55
.. Superfine Western.	3 40	3 35
RYE FLOUR, Superfine.	2 70	2 40
CORN-MEAL.	2 20	2 20
BUCKWHEAT FLOUR, 100 lbs.	1 60	1 95
BUCKWHEAT, per bushel.	45	49
WHEAT—All kinds of White.	95	1 10
All kinds of Red and Amber.	80	1 05
CORN—Yellow.	48	65
.. Mixed.	45 1/2	48 1/2
.. White.	50	62
OATS—Western.	25 1/2	38 1/2
.. State.	27 1/2	38 1/2
RYE.	54	61
BARLEY.	55	61
BARLEY MALT.	65	1 35
HAY—Bale, 100 lbs.	30	75
STRAW, 100 lbs.	25	45
COTTON—Middleings, 100 lb.	10 1/2	10 1/2
HOPS—Crop of 1878, 100 lb.	8	15
.. 1877, 100 lb.	5	8
.. old, 100 lb.	1	4
FEATHERS—Live Geese, 100 lb.	35	45
SEED—Clover, West. & St. V.	7 1/2	8 1/2
.. Timothy, 100 bushel.	1 15	1 20
.. Flax, 100 bushel.	1 46	1 50
SUGAR—Refined & Grocery, 100 lb.	6 1/2	8 1/2
MOLASSES, Cuba, 50 spec gal.	32	33
.. New Orleans, new, spec gal.	45	55
COFFEE—Rio (Gold).	13 1/2	17
Tobacco, Kentucky, 100 lb.	2 1/2	14
.. Seed Leaf, 100 lb.	3 1/2	50
WOOL—Domestic, 100 lb.	20	42
.. Domestic, pulled, 100 lb.	20	38
.. California, spring clip, 100 lb.	12	27
.. California fall clip, 100 lb.	12	20
TALLOW, 100 lb.	6 1/2	7 1/2
OIL—Coke, 100 lb.	29	30
.. Lard, 100 lb.	8 50	9 75
.. Extra Prime, 100 lb.	9	9 25
BEEF—Extra mess., 100 lb.	10	11
LARD, in tins, 100 lb.	6 00	7 05
BUTTER—State, 100 lb.	10	26
.. Western, poor to 1st, 100 lb.	7	25
CHEESE—Fresh, 100 lb.	4	9 1/2
EGGS—Fresh, 100 dozen.	20	23
VENISON, 100 lb.	—	—
HAMS, 100 lb.	—	—
RABBITS, 100 lb.	—	—
POULTRY—Fowls, 100 lb.	10	15
.. Chickens, 100 lb.	10	18
.. Penn., 100 lb.	16	18
.. Roosters, 100 lb.	5	8
Turkeys, 100 lb.	9	14
Geese, 100 lb.	1	1 1/2
Ducks, 100 lb.	45	1 00
PIGONS, wild, 100 doz.	1 50	2 00
GROUSE, wild, 100 doz.	80	1 00
PARTRIDGE, 100 pair.	50	85
SNIP, per doz.	1 25	1 75
WOODCOCK, 100 pair.	45	60
DEER BRDS, per doz.	1 00	1 25
DROPS, Wild, 100 pair.	35	75
QUAIL, 100 doz.	5 00	5 50
CHICKENS, 100 bush.	1 75	2 50
HICKORY NUTS, 100 bush.	1 75	2 50
APPLES, 100 bush.	8 50	8 00
.. Crab, 100 bush.	2 00	12 00
PEARS, 100 bush.	—	—
.. California, 100 box.	—	—
GRAPES, 100 bush.	4	12
.. California, 40-b box.	3	8
QUINCES, 100 bush.	3 00	7 00
CRANBERRIES, 100 bush.	4 50	7 00
PEANUTS, domestic, 100 bush.	1 40	1 50
BEANS—100 bush.	1 40	2 25
PEAS—Canada, in bond, 100 bu.	78	80
POTATOES, 100 bush.	1 75	2 25
.. Sweet, 100 bush.	1 00	1 75
BEETS, 100 bunches.	1 00	1 25
TURKEYS, 100 bush.	1 00	1 25
BROOM-CORN, 100 bush.	4	7
SQUASH, 100 bush.	1 00	1 75
CABBAGES, 100.	2 25	5 00
ONIONS, 100 bush.	1 00	1 25
CELERY, per dozen.	—	—
CAULIFLOWER, 100 bush.	—	—

Gold has fallen to 100½, as against 101½ on Oct. 12; 100½ on Sept. 12; 100½ on Aug. 12; 100½ on July 13; 100½ on June 13; 100½ on May 13; 100½ on April 17; 102½ on Jan. 12; 103 on Dec. 12; 102½ on Nov. 12.... Business in Breadstuffs has been on a restricted scale; values have fluctuated considerably, leaving off lower, and more or less irregular. The export inquiry has been fair, especially for Winter Wheat, and for suitable grades of Flour, the latter chiefly for the English, West India, and South American Markets, and the Wheat largely for the Continent; but this demand fell off toward the close, influenced in part by the unfavorable tenor of the later cable advices. Spring Wheat has not been in much request, and the bulk of the business in this class has been in the grade of No. 3. Speculation has been rather less animated in Wheat and Corn.... Cotton has been further depressed in price, on free offerings, and a moderate call for supplies, outside of the speculative interest, which has been fairly active.... Provisions have been quoted variable in price; on hog products again much lower, leaving off weak; on Beef, firmer; and Butter, of strictly prime to fancy quality, higher, with a moderate movement reported.... Seeds have been more sought after, but as reduced figures for most kinds.... Tobacco has been of readier sale; and Hops have attracted more attention, while Hay and Straw have been in request at former quotations.... Wool has been about steady, but not in urgent demand; and holders have quite promptly met all requirements of purchasers at the ruling figures.

New York Live-Stock Markets.

Beefes.—The market opened heavy and prices fell off until the arrivals became more nearly in a ratio with the demand. With lessened receipts, a gain of ½¢. per lb. on the average, and ½¢. per lb. on low grade stock, was made. This gain was soon turned to loss, the aver-

age of last week being the unexampled low figure of 7%. Trade closed very weak with sales of Texans and Colorados at 7@7½c. $\frac{1}{2}$ lb on estimate of dressed weight of 55 lbs. $\frac{1}{2}$ cwt. Natives of same quality sold heavily at same rates; mediums of 55 to 56 lbs. $\frac{1}{2}$ cwt. sold at 8@8½c., many of these being taken for export; extras 56@57 lbs., sold at 10@10½c. $\frac{1}{2}$ lb.

RECEIPTS.

WEEK ENDING	Bees.	Cows.	Calves.	Sheep.	Swine.
Oct. 21.....	12,350	105	3,325	31,792	45,073
Oct. 28.....	10,978	105	2,770	33,123	49,774
Nov. 4.....	9,701	151	2,874	31,938	45,381
Nov. 11.....	12,702	143	2,813	37,246	57,029
Total for 4 Weeks.....	44,831	509	11,982	134,119	197,857
do. for prev. 5 Weeks.....	60,519	354	18,038	163,113	235,442

	Bees.	Cows.	Calves.	Sheep.	Swine.
Average per Week.....	11,207	127	2,995	33,529	49,464
do. do. last Month.....	12,104	71	3,611	32,622	31,088
do. do. prev's Month.....	11,238	66	3,677	28,749	26,007

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Larger Sales.	Aver.
Oct. 21.....	6 @10½c.	7¼ @8½c.	8 c.
Oct. 28.....	6½ @10½c.	7 @8½c.	8 c.
Nov. 4.....	6½ @10½c.	7¼ @9 c.	8½c.
Nov. 11.....	6 @10½c.	7¼ @8½c.	7½c.

Cows.—There has been more demand for good cows, but poor ones are neglected and unsalable. A number of good N. Y. State cows went off readily at \$55 to \$60 per head, and these prices may be taken as an index of the market. Poor cows were refused at \$35.

Calves. Have been quiet during the past month with prices ranging lower gradually. The range has been from 2¼@7½c. $\frac{1}{2}$ lb live weight; closing prices were 2@2½c. $\frac{1}{2}$ lb live weight for grassers, 2@4½c. $\frac{1}{2}$ lb for fed calves, and 5@7c. for good to fancy veals.

Sheep.—A dull market has prevailed, with some irregularity in prices. At the close prices ranged from 3½ to 4½c. $\frac{1}{2}$ lb live weight; choice wethers brought 4½c. $\frac{1}{2}$ lb., and prime lambs 4¼@5c. $\frac{1}{2}$ lb.

Swine.—Live hogs have been at times unsalable, and prices have receded considerably. 3¼@3½c. $\frac{1}{2}$ lb has been quoted at times, but without business, and at the close, the heaviest receipts ever known in the city in one week, broke the market to 3¼@3½c. $\frac{1}{2}$ lb., with a stronger feeling at the lower prices. City dressed have sold for 4@4½c. $\frac{1}{2}$ lb., and some sales of heavy hogs have been made at a shade less than 4c. Closing quotations are a little in advance of poor business.

The Horse Market.—But little business has been done the past month. Prices are somewhat lower. Sales of small driving horses have been made at \$100 to \$150 per head. Western carriage horses have sold at \$600@850 each. A pair of fine 15½-hand bays brought the latter price. There was no inquiry for heavy draft or car horses. A shipment of half-bred Normans from the West was made to France, this being one of the rare curiosities of the horse trade and a reversal of the usual current. 30 head of fine coach horses were shipped during the last week to London.

Prices of Feed.

Brn. per ton.....	\$18.00@20.00
Middlings, per ton.....	19.00@ 21.00
Ground Feed, per ton.....	15.00@ 21.00
Linsed-oil-cake, western, per ton.....	41.00@ 47.00
Cotton-seed-cake, per ton.....	25.50@ 40.00
Chandler's Scraps, per lb.....	3@ 4

Prices of Fertilizers.

No. 1. Pernv. Guano 10 p. ct. ammonia, standard, $\frac{1}{2}$ ton.....	\$56.50
do. do. do. 10 p. ct. ammonia, standard, $\frac{1}{2}$ ton.....	47.50
do. do. guaranteed, $\frac{1}{2}$ ton, cargo 5.....	56.00
do. do. rectified, per ton, 9.70 p. c. e.....	69.00
do. do. do. do. 3.40 p. c. e.....	51.00
Soluble Pacific Guano, $\frac{1}{2}$ ton.....	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone.....	55.70
Mapes' Complete Manure (Vile formula) 1,000 lbs.....	26.14
do. do. do. Grain and Grass, $\frac{1}{2}$ 1,000 lbs.....	25.00
do. Fruit and Vine Manure do.....	17.50
do. Bone, strictly pure, meal..... per ton.....	42.00
do. do. do. extra fine..... do.....	40.00
do. do. do. fine..... do.....	38.00
do. do. do. medium..... do.....	36.00
do. do. do. dissolved..... do.....	42.00
Stockbridge Corn Manure, per acre.....	20.00
do. Potato do do.....	10.00
do. Tobacco do do.....	50.00
do. Rye do do.....	10.00
do. Wheat do do.....	15.00
Bowker's Hill and Drill Fertilizer, per ton.....	45.00
Gypsum, Nova Scotia, ground, per lb.....	8.00
Nitrate of Potash (95 per cent.), per lb.....	9 @½c.
Sulphate of Potash (potash 41 per cent) per lb.....	3 @½c.
do. do. (potash 27½ per cent) per lb.....	1½ @½c.
German Potash Salts (potash 12 to 15 p. c. p. c.) per lb.....	\$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.....	1½ @½c.
Nitrate of Soda, per lb.....	3½c. @ 1½c.
Sulphate of Ammonia (25 per cent.), per lb.....	4½c. @ 1½c.
Dried Blood (ammonia 13 per cent) per ton.....	\$40.00@45.00

Beef Cattle for Southern Pastures.—"H. Q. A." Beaufort Co., S. C. Shorthorns, Herefords, or Polled Aberdeens may be used to improve the native stock of the South; and the Bermuda and other grasses, with cow-peas, clover, roots, corn, and cotton-seed, can be made to fatten them. But it can hardly be expected that these cattle can be as heavy or as thrifty as those pastured in the cooler climates of Kentucky and Illinois. Nevertheless, by good management, feeding beef ought to be made profitable in many districts of several of the Southern States. In many cases the Devon will be found superior to the Shorthorn on light southern pastures.



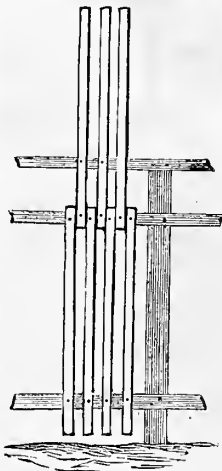
containing a great variety of items, including many good hints and suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

The Best Holiday Present.—Send to a relative notice that you have paid for him a year's subscription to this journal, and all through the year every time a number arrives that friend will have a new reminder of your kindness. The many thousand hints and suggestions its pages will afford will be turned to profitable account, and supply additional cause of gratitude.

Choosing Seed Corn.—"N. S." Tucker Co., Va. There have been numerous experiments as to the effect of choosing seed from the ends or the middle of the ears. The general results have been that there is no essential difference; so long as the ends are well-developed, the seed is as good from the tips and butts as from the middle. Corn will not deteriorate if the best ears are selected and kept for seed year by year. There are farms in many of the older States where good crops have been grown for half a century or more from one variety of seed.

Sending Subscriptions.—No Letter Needed.—At the bottom of page 488 will be found a convenient blank form for filling up with names of subscribers. This form can be cut off without materially injuring the paper for preservation, and it will save the necessity of writing a formal letter to accompany the remittance.

Chicken Yard Fence.—When it is desired to keep chickens from straying about the farm or gardens, or to confine breeding poultry, the fence represented in the engraving will be found to answer the purpose, and while it is neat and substantial, it may be constructed at a low cost. Three light rails are nailed to the posts, two near the top, as indicated. Slats are fastened from the lower to the second rail; and others from the second to the upper one, their lower ends being placed between the ends of the bottom tier. The slats are 2 inches wide, split from inch boards; the total height of the fence is about seven feet. It costs no more to make a neat fence of this description, than the unsightly things so common with unthrifty farmers.



Farming on Shares.—"Capt. C. F. K." Fort Stockton, Texas. A plot of ground being furnished by one party, the seed and labor by the other, one-half the products to each is considered in many sections as a fair division. Exact justice in such matters, however, can only be reached by a careful estimate of the value of what each one puts into the partnership: the interest on the value of the land on the one side, and the cost of seed and labor on the other; then the products may be fairly divided according to these figures. If it be argued that the land-owner has no guarantee for skill and care on the part of the tenant, so the latter has no surety for the condition of the land. The halving system is a poor one at best, for what would be fair when land is worth \$50 per acre, would be no guide on \$10 land. No one rule can be made for general application, except the business rule.

Practical Floriculture.—Mr. Peter Henderson's work with this title, while it has been of value to commercial florists generally, has been especially useful to beginners. We have known of a number of cases in which persons in small places, with a taste for cultivating plants or those who were already engaged in market gardening, have, by the aid of this work, put up small greenhouses, which enabled them to add essentially to their incomes. There is scarcely a village or town in the country of 500 or 1,000 inhabitants, where a small greenhouse, one of sufficient size to meet the wants of the community, might not, in addition to other occupation, pay the owner a fair profit. The Germans seem to understand this, and in the towns around New York, the German tailors, shoemakers, and other mechanics have their little greenhouses, in which they raise out flowers for sale to city florists. Other mechanics can in a similar manner raise plants for sale. One of the great merits of Mr. Henderson's book is, that it recognizes the wants of people of small means, and gives directions for

building small and cheap structures, as well as large and costly ones, while it is at the same time very full on the propagation and care of the plants. In the present edition several chapters have been added, giving information on such subjects, as letters of inquiry have shown to be needed. The chapter on uniting floriculture with market-gardening will no doubt meet the wants of many who are already engaged in vegetable-gardening, and would like to add flower-growing to it, or who, fearing that either alone might not pay, would unite the two. Though the work is essentially enlarged, the price remains as before, \$1.50, post-paid, by the Orange Judd Co.

Over 20,000 Men, Women, and Children have received valuable articles free from this Office, in return for their kind efforts in collecting and forwarding lists of subscribers—with profit to themselves, and to those they have invited to become readers. The reader of this might as well be one of the thousands who will receive these premium articles the present winter, or even the present month. It is worth trying. See page 481.

Ten Thousand Five Hundred Barrels are a good many apples—yet this quantity left New York City for Europe on a recent Saturday. There is always a demand for our apples abroad, even in years of plenty there, as our fruit is much fairer and finer than theirs, as well as higher flavored. While we are glad that the Europeans get our fruit, we regret that but little of the profit of the shipment reaches the hands of our farmers. In this case the shippers make the money.

"Horse Sorrel" once more. In an item in the October "Basket," it was stated that we knew of no plant generally called by this name. This has brought out several letters, which show the utter confusion that exists in the application of common names. There are two very different genera of plants known as Sorrel. There is the genus *Oxalis*, of which in the older States there are three species, all with three-parted, clover-like leaves, and showy flowers with five petals each; one has yellow, one violet, and the other white, red-veined flowers. The other genus is *Rumex*, the Sorrel of which has spear-shaped leaves, and small flowers without petals. The common names as fixed by long usage in England and in most of the older States here, are: for the species of *Oxalis*, "Wood-Sorrel," and for the species of *Rumex* in question, "Sheep-Sorrel." These common names have been adopted by the botanists of both countries, and it is very desirable that they should, for the sake of definiteness, be generally observed. But it seems that in some parts of this country the common name belonging to *Rumex* has been shifted to *Oxalis*, and that is wrongly called "Sheep-Sorrel," while *Rumex*, being thus deprived of its rightful name, is furnished with another—"Horse-Sorrel." We can see no reason for this change, as the names as mentioned above have been so applied for many years—we may say for centuries, as Parkinson in 1640 figures *Oxalis* as "Wood-Sorrel," and *Rumex Acetosella* as "Sheep-Sorrel." Let us try to preserve as far as possible uniformity in the use of common names of plants.

The Grape-Vine Raspberry.—An "Agent" is around among the Kansas farmers trying to get orders for a new variety of Raspberry called the "Grape-Vine." This is said "to look just like a grape-vine, and to grow from year to year the same."—We repeat, that new and valuable plants do not first make their appearance in the hands of peddlers. When these chaps offer anything new and wonderful—don't order it.

When You read this number through, please consider whether there are not hints and suggestions that you would not be without for the cost of the paper per year. Well, all through the year to come, many active, intelligent people will be all the while hunting up other new suggestions and information to fill up the pages. We feel sure that it will pay you and your neighbors to have the paper. Please bring them along to enjoy and get the benefit of our chatting circle for the new year, 1879.

Packing Eggs.—"E. A. D." Lamar, Mo. It is "milk of lime" that is used to preserve eggs, not milk and lime water. When eggs are preserved by packing them in milk of lime, or by oiling, it is not necessary to put them in salt; chaff, cut straw or any other light material may be used to pack the oiled eggs. Oiling will not answer when eggs are packed for sale, as it injures the appearance. There is nothing else better than the lime.

Quinsy in Hogs.—"P. M." Hemlock Hollow, Pa. Quinsy, common in hogs that are exposed to cold and damp, is an inflammation of the throat, with swelling of the glands, and if this is excessive, there is danger of suffocation. To prevent it, keep the pigs warm and dry. Treatment of the disease: rub mustard paste upon the throat, put the pigs in a warm place with plenty of dry bedding, and give warm linseed or oat-meal slops.

The Next Volume

Of this Journal, will far excel the present one, and all previous ones, in useful, practical, and varied information, which will be valuable to every reader.

Reading Pays, not merely in what tells one that he can at once do, but the thoughts he gets in reading what others do and say, incites thoughts and plans in his own mind that result in profit. The reading, thinking man makes his head help his hands. Brains tell everywhere, and in nothing more than in farming, gardening, and housekeeping. The fewer brains one has of his own, the more should he get all the facts and suggestions he can out of other people's thoughts and experience.

Bound Copies of this volume, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at \$2 each (or \$2.30 if sent by mail). See Publishers' Notes, on first page.

The Kind of Farming that Usually Pays.

—In his "Talks," pages 462-3, our contributor returns to a subject that he has often talked about and brought forward in many ways, and with numerous illustrations. But the lesson is none the less important, and it should be carefully considered by every cultivator.—Timothy Bunker, Esq., over the signature of "Connecticut," gives a forcible example on page 463. Land so drained and worked as to be independent of rains and drouth, and so treated as to secure a large yield, as a general rule, is sure to be profitable, taking one year with another. Take this Connecticut instance: Which would have been the most profitable: to have continued trying to get something from the land worth \$5 an acre; or, if necessary, to have sold 9 acres of it, and expended the \$45 got for it, on the other two acres? In the latter case, he would get a good profit from the work on the two acres; but he would grow poorer while working the 11 acres. Brethren, think on these things. Thinking pays as well as working—and reading other men's thoughts helps one to think. "Brains" is a most excellent manure, as our good friend Timothy Bunker, Esquire, would say.

Borers.—"J. A. J.," N. Y. City, does not bore one by the length of his letters. "Please let me know how I can get rid of borers in an apple-tree?"—is plain and comprehensive. He allows us to infer that he knows they are in the tree. The Round-headed Borer, the one known in the Eastern States as the borer, lives for two years on the sap-wood of the tree, and may be cut out by the use of a strong knife; in the third year it enters the solid wood of the tree, when it must be followed by a wire and punched to death. When the borer is once in the trunk, no external application will avail; equally useless is plugging the holes, recommended in some papers.

New-Zealand Wagon.—"S. F. E.," Dunedin, Otago, New-Zealand, sends a sketch of a wagon with the following description: "I had a double-shafted wagon built to order, with hind-wheels 6 ft. high, fore-wheels 5 ft., tires 6 inches wide, and iron axles; body 3 ft. deep, and 12½ ft. long. This wagon was so easy-running, on



A NEW ZEALAND FARM WAGON.

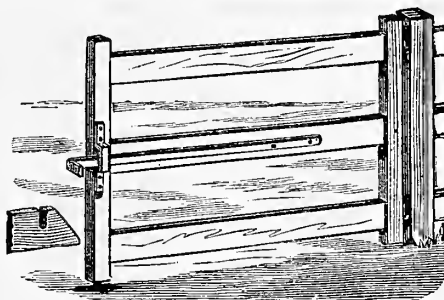
account of the high wheels, that I drew it myself, a yard forward, and backed it, though it weighs 1 ton 8 cwt., and I weighed less than 11 stone at the time. It was used in carting some manure from 8 miles away, 4 horses being attached (2 and 2), and for the last load, to finish the job, we drew 5 tons 16 cwt., or 7 tons 4 cwt., including the wagon. The road was good, but hilly; the horses were of moderate size, but drew the load without difficulty." This experience is valuable, as showing the superiority of high wheels for ease of draft. High wheels compare with low wheels just as a long lever does with a short one. The broad tires and iron axles don't less added to the easy running. Such wagons are inconvenient for loading, and perhaps less economical than lower and smaller ones for ordinary farm-work; but for large loads and long distances, this style is worthy of consideration. Thanks to our far-away correspondent

for his interest in the *American Agriculturist*. We have a large constituency in that part of the world, and like to hear from them often. America can learn from, as well as give instruction to, other countries.

To Prevent Canvas from Shrinking.—"Enquirer," Marshall Co., Iowa. If the canvas on your harvester is coated with boiled linseed oil, it will not absorb water and will not shrink. Apply two coats on both sides of the canvas, and give it a coat every season afterwards. A large sheet, thus prepared, may be thrown over the machine when there is danger of rain.

The Japanese Persimmon or Kaki.—The Rev. Henry Loomis, San Francisco, who has been engaged in introducing the Japanese Persimmon into California and other parts of the country, sends us a neat album containing reproductions in colors from Japanese paintings of this fruit. There are nine varieties of different sizes and shapes; they are mostly scarlet in color, two of them being yellow. We have before mentioned the excellence of the fruit, and hope it may be found adapted to a wide extent of country. The limits of its hardiness have yet to be learned by experiment; our own experience, a short distance north of New York, has not been favorable. It is hardy at Washington, D. C., and is reported to be so at Flushing, Long Island.

Convenient Gate-Latch.—"A. V.," New York, hands us a sketch of a gate-latch, which is an improvement on the ordinary form. It is a long flat bar of iron, turned up at the outer end, and fastened by two bolts near the inner end, as indicated in the engraving. By this arrangement the latch becomes a spring, and forces itself into the catch when the gate is closed, with the surety of keeping it there, even when slammed to. The failure of a latch to stay in the catch, is a frequent cause of annoyance and inconvenience, and often results in the straying of animals from the pasture or yard.



SELF-FASTENING GATE-LATCH.

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Rape.—"S. C.," State Center, Iowa. Rape may be grown for feeding, but it will not pay to grow it for seed, because there is no demand for it as a source of oil. It is, however, an excellent crop for fall and early spring feeding. A peck of seed is sown per acre as for turnips, in July, to be eaten off in September and later. Or it may be sown in September, and eaten off in the spring.

A Good Dinner for Four Cents seems a very low price, yet it is possible in a family of six—two adults and four children, as stated last month in our notice of Miss Juliet Corson's little book entitled "Twenty-five Cent Dinners." It was there announced that the Orange Judd Company were to become the publishers of this work, which they have done at the suggestion of the editors, who were so well convinced of its usefulness, that they felt it should have the widest possible circulation among all classes of the community. The work was written to teach the wives of mechanics and others of moderate income, how to live both well and cheaply. Many cook-books in their recipes direct this and that, without regard to expense; in this little work the cost of everything is counted, and we regard this as a most useful feature of the book, as it is quite as important for the wives of farmers and villagers to count the cost, as for city house-keepers. But after all, we think that the chief utility of the work will be in showing how easy it is to have a variety of food, and whatever will do this must be useful. Fried meat, or the meat put into an oven, baked to a crisp, and called "a roast," are quite too frequent in this country, whether in city homes or farm houses, while soups and stews are correspondingly rare. The present edition has a chapter prepared especially for it on the preparation of fruits for the dessert. The "Twenty-five Cent Dinners" is sent for Twenty-five Cents from this office, by mail, post-paid.

Light in the Dairy—Animal Odor.—"J. A.," Wash. Territory. Light has the effect of deepening the color of both cream and butter. It is well to have abundant light in a dairy, but let it be protected from the direct rays of the sun, lest the temperature be raised excessively. The so-called "animal odor" is something of a hum-

bug. It is a new sensation in dairying. When cows are cleanly fed and kept, the animal odor is not disagreeable. The "sweet breath of the heifer" was noticed by Virgil, and by every dairyman since. But these sweet-breathed heifers do not cat horse-droppings in filthy yards, nor stand up to their knees in dung. That is where the animal odor usually comes from.

Quantity of Grain for a Colt.—"M. D.," Scotia, Neb. It is not well to give much grain to colts during their first winter. If fed too liberally, then, they are quite sure to do poorly on pasture-fed the next summer; enough should be given them, however, to keep them growing and healthy. A pint to begin on, and not over a quart a day later, is sufficient the first winter. Ground oats is an excellent grain-food for colts. An occasional small foddering of chopped roots is beneficial.

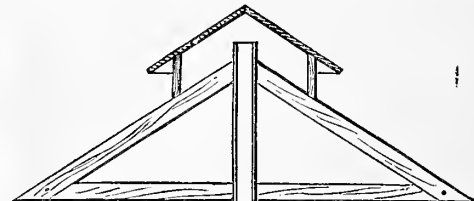
Excess of Salt.—"J. F. G.," Almont, Mich. Salt in excess is injurious to animals. It acts then as an irritant and produces inflammation of the throat and intestines, and sometimes it causes diarrhoea. A small handful is sufficient at one time, and it should be given with the food when not kept constantly before them.

The Shepherd's Manual, By Henry Stewart; a new edition. This work has had a remarkable success, and the reason is evident. It is the only work of late years, that gives all the breeds a fair showing. The American works that immediately preceded it, were devoted to a particular breed only. In a country so varied in its natural features as ours, it is folly to suppose that one breed of sheep is best suited to all sections. This work is not devoted to wool producing only, but recognizes the fact that there is an increasing demand for mutton, and that the raising of early lambs is a profitable branch of sheep raising. The work is not merely the reproduction of some English author, but its teachings are from American experience, and it covers the whole subject of the shepherd's management, in a very satisfactory manner. The work has been revised by the author, for a new edition, and he has added an important chapter upon the various localities suited to this important branch of agriculture, indicating the breeds and crosses most likely to succeed in each. Though thus enlarged, the price remains the same, and it is sent post-paid by the publishers, the Orange Judd Co., for \$1.50.

Guano on Grass Lands.—"J. T. N.," St. John's, Newfoundland. Guano, and other fine, concentrated fertilizers, should be applied when growth is beginning, which, for grass, is in early spring. It is not necessary to compost these fertilizers, unless to secure even distribution, as they are already in the condition to furnish plant-food. A fertilizer distributor is an economical machine when large quantities are used (say for ten acres or more). When chemicals or other fine fertilizers are mixed together, it should be done immediately before using them.

Subsoiling in Minnesota.—"K. O. S.," Lake Park, Minn. It will hardly pay to subsoil rich prairie land. If "it is too rich for wheat," sow the wheat very thinly, about half a bushel to the acre. There will then be less danger of the crop lodging from weakness of straw, which will be stronger, and the grain will be heavier, and more of it. It will pay to try thin seeding.

A Cheap Ventilator.—There is no necessity for an expensive ventilator for a stable or barn. The simplest method is to connect the stable floor with the outer air by means of a square wooden tube, the upper end of



CHEAP VENTILATOR.

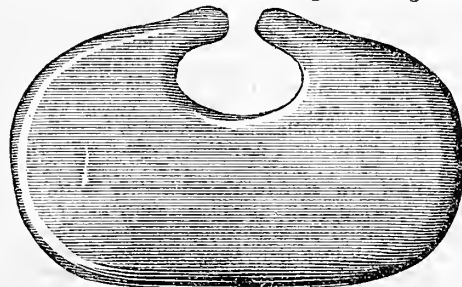
which is carried through the roof about a foot. A cap, made as shown in the engraving, is fixed to the roof over the opening of the tube to keep out rain and snow. This answers all the purposes of ventilation, and can be constructed at small cost by any ordinary carpenter.

Guernsey Herd Book.—The prominence which the Guernsey cattle are assuming in this country, must be pleasing to those who know the value of the breed for its milk and butter qualities. We have at hand the first volume of "The Herd Register of the American Guernsey Cattle Club," recently published, and edited by Edw. Norton, Farmington, Conn., Secretary of the Club. Bulls to the number of 96, and 217 cows, are recorded, which indicates a larger number of pedigree animals than many had supposed were in the country, as these figures probably include but a portion of the entire number

Save the Index Sheet, which is put loosely in this number, so that it can be bound or stitched at the beginning of the volume. It enumerates about 2,000 valuable, paying facts and suggestions, and 600 illustrations.

\$100 for 13 Cents.—A Cow that Sucked Herself.—A Business Man furnishes us the following for publication, but "don't want the notoriety of having my name in print:" "....I have taken the *American Agriculturist* for many years, and always find in each number some hint or suggestion that I would not be without for its cost, of 13 cents. Here is an illustration of the value of one number. I had a fine blooded Jersey cow that cost me \$150, and was worth it to me, until she contracted a habit of sucking herself. I tried various remedies, including an unsightly head frame with projecting sharp points. I was so disgusted with the creature that I would have jumped at an offer of \$50 for her. Your paper told me to put a short piece of small gas-pipe across her mouth, leaving the ends open, and make two or three small holes in its middle, tying it in with a small cord extending to the horns. I had this done with a bit of iron pipe I chanced to have. The air admitted through the ends and little holes prevented suction; the pipe did not interfere with her eating, or make much show, while it entirely broke her of her bad habit, and after awhile it was left off. Now I would not take \$150 for her as a milker and breeder. That item was surely worth \$100 to me, and that number cost me only 13 cents. I say to every man: you can't fail to get some hints every year if not every month that you can not afford to be without for many times the cost of the paper."—[We have multitudes of testimonials of a similar character.—Eds.]

Jewel to Prevent a Cow from Sucking Herself.—A subscriber sends a model of a "jewel" which is used in the nose of a cow that sucks herself. It is made of some soft, tough wood, such as bass, poplar, or ash, and about twice as large as the engraving



A WOODEN JEWEL FOR A COW'S NOSE.

represents. The distance between the knobs of the two lobes is about $\frac{1}{4}$ inch, just enough to permit their being pressed over the thick edge of the cartilage of the nose, and close enough to keep the "jewel" in place. The instrument hangs down over the cow's nose, and prevents her getting the teat into her mouth, but does not hinder feeding. It is an easily made and practicable device.

Price of Milk at the Factories.—"T. B.," Saginaw, Mich. The factories are now paying less than one cent a pound for milk. When cheese is 10 cents, milk should be worth about one cent per pound; for it requires 10 pounds of milk to make a pound of cheese. The value of milk depends upon the prices of its products: cheese and butter. The better these are, the higher price they bring, and the more the milk is worth.

Good Service Complimented.—At the recent annual fair of the Farmer's Club, Dr. Cramer, President of Trinity College, North Carolina, addressing Capt. A. Parker, said: "By request of the Society, I present you, for your prompt attendance at every meeting since the Society was organized, a copy for the coming year of the *American Agriculturist*, the best Agricultural Journal in the United States...." (a double compliment!). So writes Chairman D. Reid Parker....**QUERY:** If each one of the 3,500 Agricultural Societies, more or less, in this country, should similarly compliment each officer having the same claim to recognition, as Capt. Parker, by how many copies would the circulation of this journal be increased? "We pause for reply."....P. S.—We cannot calculate upon a large increase from this source, first, because we fear there will be comparatively few who are able to show such a record; and, second, because, as a rule, the active, enterprising men who are foremost and most faithful in helping on agricultural improvement, are already regular readers of this journal.

The Nettle Story.—Certain newspaper statements, like comets, have their orbits, and come around again at intervals. At one time it is the man who produced seedless apples by putting in a bud upside down; at another it is the one who produced the sweet and sour apple by inserting the halves of two buds. Just now it is the Nettle, and we can hardly take up a paper without

seeing a statement of the great value of the Nettle as a fibre-producing plant, and that our Consul somewhere has communicated the important news to our Department of State. The last article upon this subject that we have met with, concludes thus: "The question occurs how a plant possessing such a variety of merits should have been for ages regarded as the most noxious of weeds?"—Having heard of Nettle linen as long as we have known about the uses of plants at all, we, as a matter of curiosity, traced back the uses of the Nettle fibre. Having reached the ancient Egyptians, we stopped in the search. There are now parts of Ireland, Scotland, and of Germany, where the country people have used for ages and still use the Nettle fibre to make their household linen. The reasons why it is not more cultivated are: the small quantity of fibre and the difficulty of separating it, and the fact that to produce a really fine fibre, the richest possible soil is required.

Other Journals and Magazines in Club with the American Agriculturist at materially reduced rates. See page 183.

Mocking-Bird Food.—"A. W. C.," Fall River, Mass. Mocking-birds are difficult to keep, but, with care in feeding, the obstacles may be overcome. For a steady diet, use corn-meal and milk (made up twice a day to insure its sweetness), with a little chopped, hard-boiled egg mixed with it, and some mashed potato occasionally. Chopped beef, flies, and spiders, should also be fed them, or if turned loose in the room, they will catch insects for themselves. Cherries and berries, especially Pokeberries, in their season, are much relished by the birds, and are a necessity to insure health. Regularity in feeding, and care, and cleanliness, are essential to success.

Mixed Corn.—"S.," Genyo, West Va., having corn with both white and yellow kernels on the same ears, inquires about planting this mixed seed, as these ears seem more solid than those bearing kernels of only one color. We do not believe in "mongrels" of any kind, and doubt if the mixed ears have any advantage in the way of solidity that may not be found in some established variety. Evenness in ripening is often important in the corn crop, and the two sorts in these ears may mature together or not. A field planted with this seed would have some stalks bearing all yellow and others all white ears, while many would be more or less half and half. If there was a week's difference in ripening, a part of the crop would be cut up too soon or too late. Besides, there is a chance of loss from imperfect fertilization—a matter we have not space to discuss here. We favor attempts to improve Indian corn, but planting mixed seed is not likely to lead to any good result.

The Illinois Horticultural Society.—The 23d annual meeting will be held at Springfield, Ill., on Tuesday, the 10th inst., and continue for four days. The programme is full and attractive, and rail-roads and hotels reduce their fares. Mr. O. B. Galusha is Secretary, and we would give him due prominence and thanks as just one Secretary who sends us the notice of a meeting in time for us to publish it. Re-elect Mr. Galusha.

Covered Milk-Pail.—The Dairy Supply Co., of New York, exhibit a milk-pail which excludes all dust and dirt from the milk. As shown in the engraving, its cover is somewhat hollowed, to make it strong, and is used as a seat for the milker. The funnel projects under the cow, and occupies a convenient position for receiving the milk; it is connected with the pail by a heavy rubber tube, so that if kicked by the cow, no damage is done; in the lower part of the funnel is a wire-gauze strainer which prevents any impurities getting into the pail. The result, with proper care otherwise, is clean milk; no danger of loss by the cow's putting her foot into the pail or kicking it over, and greater convenience



to the milker than the ordinary pail affords. This pail makes some amends for even a careless milker; but a lazy or slovenly man need not think that it will remedy the result of his sloth or carelessness, or give better milk.

Concrete Floors for Cow Stables.—"A. G. W.," Navarino, N. Y. Concrete floors are "a good thing for cow stables, where part of them are to be stanchioned, and part kept in box-stalls," or otherwise; but such

floors especially require the use of absorbents, as fine earth, muck, or plaster, etc. The stanchions and partitions are fastened down by bedding them in the fresh concrete, or by drilling holes in it when dry. Gutters are easily made in the concrete, by laying down a "form" of the desired width and depth, and "puddling" about it. A good concrete may be made of 1 part cement, 1 part lime, 6 parts sand, and 4 to 6 parts of small pebbles. "An inexperienced man," who is handy with tools, knows how to make mortar, and has sufficient judgment, can lay such a floor. The surface is made smooth by levelling, pounding with a maul, and finishing off with a mason's trowel or other smoothing instrument.

Ratio of Corn-Stalks to Grain.—"B. S. N.," Washington, D. C. The relative proportions of corn-stalks to the grain depends on the soil, manure, variety, cultivation, and season, either one of which may modify the ratio—a tall, rank-growing variety has a much larger proportion of stalks than a small-stalked, many-eared sort. Rich, nitrogenous manure develops more stalks than grain; a wet season more; good cultivation reduces it, and poor soil and poor manuring give an undue proportion of stalk. We quote from several experiments, which show the range of the proportions:

Acres.	Grain per Acre.	Stalks per Acre.	Lbs. Stalks to 1 Bush. Grain.
16	75 bush.	6,000 lbs.	80
8	120 "	9,640 "	80½
—	82 "	8,240 "	100½
—	318-10 "	5,122 "	149

* The average yield in Massachusetts, taken several years ago; the yield is larger now.

The above figures are all of northern corn; probably the western and southern varieties would show different proportions, though no more regular. Other estimates allow $1\frac{1}{2}$ to $2\frac{1}{2}$ tons for a 50 bushel per acre crop. The variety of seed and the treatment, which produce the smallest amount of straw for a given amount of grain, is the most desirable. Thoroughly dry corn-stalks can be baled the same as hay and straw, and not heat.

Bronze Turkeys.—"J. H. S.," Logan, Ind. Bronze turkeys are the result of a cross of the wild turkey upon the black; or it may be that they are only the wild race domesticated. They are much larger than the common black variety, the male birds often weighing 30 or 40 pounds, sometimes more, when fully grown.

Pearl Millet in Canada.—A. Coindet writes that he procured of Wm. H. Carson (125 Chambers St., N. Y.) the seed of Pearl Millet, and sowed it in a yard in Montreal. The soil was not manured, and the yard had the sun for only about two hours in the day. He sowed May 20th, and on July 15th, it being five feet high, he cut it; he cut again on Sept. 15th, the height being six feet, and again on Oct. 1st, when the stalks were nine feet in height. Mr. Coindet states that both his horses and cows were very fond of the millet, green or dry.

"Stock Breeding," by Manly Miles, M. D., late Professor of Agriculture in the Michigan State Agricultural College. New York: D. Appleton & Co. This work comes to hand just as our last pages are closing, and we can barely announce it, much less review it. A long acquaintance with the author and his enthusiasm in this specialty, his scientific thoroughness and conscientious accuracy, allow us to say that, whatever is stated in the work as fact, may be relied upon; and whatever is given as opinion, is sure to be honestly entertained. Sent from this office at the Publishers' price, \$1.50.

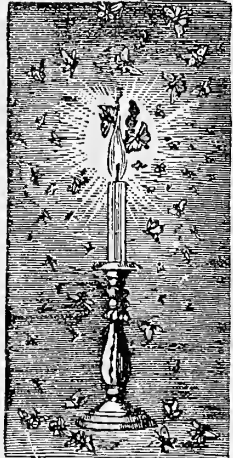
Basket Items continued on page 481.

Letter From South Australia.

The editor of the "Australian Star," Adelaide, South Australia, in an interesting letter to the editor of the *American Agriculturist*, writes: "In your July issue, you remark, 'The Australian farmer can by no means rejoice over his American brother; on the contrary, the latter may congratulate himself, that he is not the only, nor the worst sufferer, from small wheat crops.'—It is true that our average yield is small, for in 1875-6 it was $11\frac{1}{2}$ bushels, in 1876-7, $5\frac{1}{2}$, and only about $7\frac{1}{2}$ bushels last season, but our farmers are far from poor. A man can purchase 1000 acres in South Australia at \$5 per acre with nine (9) years credit. He has to deposit ten per cent of the purchase money, which sum is regarded as interest in advance for 3 years. With the aid of a South Australian invention called a Ridley reaper, which takes off the ears and leaves the straw standing, his wheat will not cost him \$6 per acre. The farmer can, therefore, count on clear profit the value of every bushel in excess of 5 bushels to the acre. Late frosts and red rust spoil the last harvest, and many farmers were obliged to cut their wheat for hay, while others, hoping to reap ten bushels to the acre, found the ears only half filled. The highest yield was 35

bushels per acre, the lowest was not worth securing. South Australia has secured the Grand Prize at Paris, for wheat, and is destined to be one of the greatest wheat-producing countries on the globe; we never had such good prospects of a large yield as we have now. Unfortunately, late frosts or red rust may again blight our hopes. Should your readers require any further information on wheat-growing in South Australia, you have only to ask for it and it shall be furnished."

Sundry Humbugs.



Here, at the close of the year, we find our humbug budget quite as large as, if not larger than, it was at the beginning, and we naturally ask ourselves if our work in this department has been productive of any good. We do not regard the enlarged correspondence in this line as indicating that fraud is on the increase, or more successful than heretofore. It only shows that our influence is extending, and as our exposures become more widely known, we are more frequently applied to by those who have received the proposals of swindlers, and those who, having been

duped, wish to warn others. Had we not the satisfaction of knowing that our labors have been productive of good, we should not, as a matter of choice, continue these exposures. We do not find room to publish the many letters of thanks and appreciation of our labors that constantly come to us; indeed, we seldom make a journey of any considerable length without being personally thanked by persons for our efforts in this direction. Some swindles appear to have a short run, and are heard of no more; others are persistent and perennial, and continue, if not the same in form, the same in nature, year after year. We write no valedictories to our readers, as we assume that our present friends will continue, and bring some others with them; but the end of the year is a fitting time for calling attention to those leading forms of fraud that now prevail. Firstly,

THE FRAUDS UPON FARMERS.

which are much more frequent than is generally supposed, as the majority of the victims, ashamed of having been duped, "grin and bear" the loss in silence. Those who operate among farmers have a shrewd knowledge of human—we may say, farmer—nature. They know that farmers, who generally work so hard for what they earn, will look with favor upon a scheme which will allow them to make money both honorably and easily. Besides this they know that farmers, being generally honest themselves, are unsuspicious of others, and may be caught by methods that would not succeed with shopkeepers and others who are always on the look-out for some crookedness. We have often printed the injunction,

FARMERS, BE CAREFUL WHAT YOU SIGN,

and have wondered if there were no easy method of keeping it always before them. If our humbug column could so impress its importance, that every farmer, or other reader, would always, and habitually and carefully, read and understand whatever they put their names to, we should feel that our year's work had been attended with most useful results. Here is one of the simplest—and we regret to say, commonest—instances. Scene—a farm-house in Queens Co., N. Y. A glib-tongued chap comes in with a Patent Rest for a wagon pole or tongue—no rest, patent or other, for the *waggin' tongues* of these chaps—he convinces farmer that this is something every other farmer must have—in fact, can't live without; they have only to be known, to "sell like hot cakes," at \$5 each; and as he, with the glib-tongue, must leave by next train, he will appoint farmer agent for the sale. Farmer does not know that he has made the same offer at the last house, and will do the same at the next. He thinks that the offer, half the amount, \$2.50, on each one sold, is liberal for his share, and consents to become the agent. That there may be no mistake about the matter, farmer will please *write down his address*, in his book, so that the goods may come all right. A proper enough request, and the farmer writes his name very plainly. Days, a week, two weeks passed, but no wagon-pole things came. But something else came. Neighbor Blank, who lives up the road, called to see if it was convenient for the farmer to pay that little note. "Note!" He owed no note to any man living. Neighbor B. showed a note for \$15, on demand, which, having the money doing nothing, he had bought at a slight shave of

the wagon-pole man. Queen's Co. farmer could not deny the signature. In merely giving his *address*, he had signed a note which was all in legal form. When we hear of such cases every month, is not our warning needed? A similar case occurred in Calhoun Co., Mich., but here

THE FARMER OUTWITTED THE ROGUE.

We wish we had space for the wife's letter just as written, but it is too long. Wife is a careful reader of the *Am. Agriculturist*, especially the Humbug columns. Husband was disposed to make light of this, and boasted that he couldn't be caught signing a paper that he didn't know all about. Stump-puller man came along, induced farmer to become agent, offering large profits. Farmer told his wife that he had signed an agreement to become agent. Wife asked if he had read the paper. "No, he had not his glasses with him."—Wife told him that he had probably committed himself, and so alarmed him that he went off to the neighboring town, found stump-puller chap, declined being an agent, and stump-puller man pretended to cross off his name with much flourish. In a week two chaps drive up to the farmer's house, inform him that there are 25 stump-pullers at the depot to take away and pay freight on, and that they would collect pay for one ordered for his own use. Farmer denied sending for them—chap, to prove that he did, takes out a paper with a triumphant—"you won't deny your own signature, will you?" Farmer would examine his signature more closely, gets hold of the paper, crushes it in his hand, and tells them he would keep it. Chaps threaten penitentiaries, state prison and search warrants, but farmer holds on to the paper. Chaps call in the wife, asking her to reason with the husband—wife tells him if he has the paper to keep it. She told the chaps that she reads the *American Agriculturist*, which they didn't seem to like, and gave them a piece of her mind on swindling in general. They propose various compromises, but all are refused, and they at last depart with many threats. The wife writes that she thinks that a man who will sign a paper without reading it should be punished a *little*, for she found that he had signed an agreement that would have ruined them to comply with.... Inquiries about

THE SEMINOLE GOLD MINING CO.

continue to come. A sufficient answer to all these is found in our "Editorial Correspondence" on page 458. Certainly that should satisfy the most credulous. We learn that this swindle is taking considerable money from some of the Western towns in one dollar shares. In one flourishing town in Illinois a lady acted as agent for their sale. One correspondent sends a copy of a letter from an officer of this "hole in the ground company," in which he speaks of our remarks as "idle and malicious." We wonder how he likes those of the "Laramie Sentinel," quoted on the page referred to—that "does the thing up brown." One correspondent in Lynn, Mass., writes that he owns thirty-one shares, but does "not know for certain if they are honest or not." Why should there be such a fascination about a gold mine as to induce persons to invest in it blindly? ...The

"IS THIS YOUR SIGNATURE?"

letters of Clark & Co., who "adjust claims," continue to come. It is funny that the amount of "Mining Stock" is always an even \$500. Of course these remarkable adjusters that adjust things, have a way of getting hold of genuine signatures, and this puzzles the writers thereof. We suggest that those who are at a loss to guess how Clark & Co. got possession of their signature, consider whether they have had, in the past, any correspondence with any "patent agency" in this city.... It fits with regret that we announce that

THAT COUSIN IS NOT YET FOUND.

This time it is H. P. Jones & Co. who are in the lost cousin business—though how a Co. can have a cousin, we can't understand. It is an old dodge, but may be new to some. "Jones & Co." use the singular pronoun; his letters inform people that, "In looking over your State Directory, your name attracted my attention"—"Jones & Co." reads directories—and very interesting they are; though the story is not altogether continuous. "A cousin of mine (*me* being J. & Co.), bearing the same name as yours, after the war, left his regiment, and we have not heard from him since."—Poor Jonesey & Co. I * * * "If you are my cousin" ("you will *not* have a strawberry mark on your left arm"—does he say?—not a hit, no sentiment about J. & Co., he means his; he continues:) "I can do you a favor and you can help me"—"Jones & Co." is the agent of a lottery—circular enclosed—J. & Co. will enclose coz. a ticket good for any one of the drawings—we haven't the least doubt it is just as "good" for one as for another—"with this understanding, that I will arrange it so that you will draw a large prize, (who says that lotteries are not honorably conducted games of chance!) if you will act as agent for the sale of tickets. * * If you accept * * I will arrange it so that you will draw the prize in next week's drawing." Then our long lost "cousin" gets, in a few days, a circular from W. P. McCall, notifying him that his ticket "has drawn an assorted lot of gold jewelry (45 pieces), valued at \$160"—

of course coz. has only to send and get his 45 pieces—not quite. "The percentage due for packing, shipping, etc. (especially 'etc.'), is \$13.50." Who would be cousin to "H. P. Jones & Co.!" He is a very numerous cousin, he lives in ever so many States; Jones & Co. can arrange his ticket, but he can't get his stuff clear of that percentage. H. P., don't you think that there is a gossamer thinness about this "cousin" business?

"THE QUEER" OR COUNTERFEIT MONEY

humbug, is, with the exception of lotteries and quack medicines, the most venerable of all the swindles. It was sufficiently noticed last month. A recent feature is the circular of A. C. Chapman—and a very pretty signature you make, A. C.—who don't have any of "a certain queer class of money" himself, but he knows a chap—man who has some prime, "on the most liberal terms."

LOTTERIES OF ALL SORTS

are among the perennial nuisances, and come in so many forms that we have no space to specify them—those only who let them entirely alone are safe from the more fraudulent forms. These lottery chaps show skill in advertising. The "Commercial Gazette" is an innocent-looking paper. Its outside pages have some talk about angels, and a quotation from the "Christian Union," all as "sugar-coating," for the two inside pages are broad-side lottery advertisements. Yet these things, in spite of law, and the vigilance of post-office officials, go wherever the mail reaches, especially the Far West.

THE SECRET SERVICE NONSENSE

and other Cincinnati schemes seem to be very quiet. Whether that wonderful corps of detectives is full, or these don't subscribe to the "Gazette," or whatever the cause, it seems to have subsided. What, too, have become of those distinguished lamp people, and that remarkable "Art" distribution. It must be very dull in Cincinnati. Of course reference to some of the leading forms of humbuggery, must include

QUACK DOCTORS AND THEIR MEDICINES,

which are more numerous than any other. We have not space to enumerate or specify. Our advice to every one and all the time is, take no *secret* remedy whatever; do not give it to the members of your family; do not treat your domestic animals with any secret compound, and finally, have sufficient respect for our good Mother Earth, and do not desecrate her, by dosing her with secret fertilizers... We would say to those who have been inveigled by promises of profit, to undertake the sale of quack medicines—no matter whether several "Barks," Bitters, Pills or Plasters; whatever contract you have made, the law will no doubt hold you to no matter how worthless the stuff may be. Get out of the scrape as you can, for you may be sure that one who will work upon the fears of the sick, and hold out false hopes to those already beyond hope, in their lying circulars, will have no mercy on a well man. Do not write to us, for we cannot help you. A bargain is a bargain. At the same time don't mind threats. Isn't one of these quacks who assumes the Friends' language, and thee's and thou's, sweetly in his quack pamphlets, just threatening a little more than he can hack up. The harks of some dogs are worse than their bites. We did not intend to specify any quack, but here is one too good to pass unnoticed. So

MAKE ROOM FOR SAGENDORPH

and his battery! S. is "offering to the public Batteries which are made of *newly discovered metals*." He need not add that they produce "results not less *startling* than *salutary*"—for his mere announcement is "startling" "newly discovered metals!" there must be at least *two* of them—and don't you know, Sagendorph, that one "newly discovered metal" is all that the greatest chemist in the world would ask as his passport to undying fame! But here are *metals*: Sag, we congratulate you. Your battery which is "constantly though imperceptibly impregnating the *Nerves and Blood* with new *Electric Life*" is a battery that heats the telephone, microphone, phonograph or any other phone or graph ever invented.

Farming East—Farming West— Farming South.

A capital joke, upon himself, is doubtless remembered by many readers, of an editor starting an agricultural paper in a Western Capital town. In his first number, with 21 octavo pages of reading matter, he used two of them in urging people not to go East, but to take a home paper, "adapted to their own wants." The joke was, that of the other 19 pages, 16 of them were filled with matter prepared for and first published in the *American Agriculturist*, though less than half of the articles were credited. They were scissored from places where their paternity was omitted. This is an illustration of a good deal of nonsense uttered to help out somebody's

personal ends. There are a few special points of difference in the modes of tillage and harvesting, and in the crops grown in different sections of the country; but the *foundation principles of successful crop-growing, feeding, and marketing, are the same everywhere.* So are those of the mechanical appliances that now enter so much into the operations of profitable soil culture. We will not stop to illustrate here. This Journal has for twenty years circulated very largely all over the Western States, and largely at the South, and the testimony to its utility has been constant and great, though we have always ignored special attention to locality. (The largest circulation in proportion to population has usually been between Ohio and the Pacific Ocean.) But there are some reasons, just now, for our giving increased attention to the peculiar features of Western and Southern agriculture. *First*, the depressed condition of trade and manufactures in the older States is leading hundreds of thousands, or millions indeed, to look to the broad, unoccupied lands in the Western and Southern States, as inviting fields of labor, and future homes. We will try to aid them in their desire for more specific information.—*Second*, the demand, greatly on the increase, for meats, to be taken, alive or dressed, to Europe, makes the grazing and fattening of good stock at the West, as well as the East, especially at the West, and probably at the South, a subject of much importance now. *Thirdly*, it is our province to meet the wants of those who are at the West, and who think they need special and peculiar information particularly adapted to their work. This we shall look to. The truth is, our great American field is one in interest, and it will be our greatest pleasure to aid in developing every part of every section to the highest point possible.

We invite suggestions, queries, and information from all points, West and South, as well as East. Special editors or contributors residing in different localities will look after the special needs and information required in each section.

"To Do Good and Make Money."

Eight and twenty years ago the writer was in the Yale Laboratory, with Silliman, Norton, S. W. Johnson, Brewer, Weld, Willet, Safford, Shepherd, and other now distinguished men—all wrestling with practical chemistry, trying to find out what it could do, and what it could not do, for the improvement of soil culture. What it could not do, for there were wonderful hopes indulged then, by true, earnest, scientific men like Liebig, and more wonderful claims put forth by those who had a mere smattering of chemistry, especially those who had an ax to grind in the making and selling of fertilizers.... One morning, a man came in to sell an Almanac, a good one, the title-page of which read: "Beckwith's Almanac," "Published To Do Good and Make Money." That motto left upon the writer a strong impression. What higher motive for business enterprise and activity? He is a public benefactor, who makes two blades of grass grow where only one grew before, is a trite old adage, but it is a true one. All those who are laboring to this end, are doing a good work. Every man who helps get up and carry on agricultural societies, clubs and fairs, for disseminating information, is helping increase the blades of grass and the ears of corn. Every item of knowledge gleaned from meeting with others, from conversation, or from reading, gives a man new thoughts, and helps make his work more productive. Every man will be doing a good work who, this winter, helps diffuse information among his neighbors, by aiding in organizing farmers' conversational clubs, in circulating useful books and papers, etc. A few good books on farming, and Journals coming fresh from month to month, if circulated in any neighborhood, will have a grand influence, silent though it may seem and be, in developing thought, dignifying agriculture, improving practice, increasing products, and there will be a reflex benefit to him who helps in extending such influences. He will thus be "*doing good, and making money.*"—Our Publishers offer premiums, equivalent to money, to those who help increase the num-

ber of reading, thinking, cultivators. Those who work for these, will have a three-fold reward.

International Dairy Fair.

The importance of the International Dairy Fair, to be opened in New York at the American Institute building, 3rd Ave. and 63rd St., beginning Dec. 2, should attract the attention of all interested in dairy matters. If the exhibition equals the promise of the preparations, it will be worthy of the name it has taken, be a credit to the country, and result in substantial benefit to the industry. Several similar fairs have been held in Europe, with marked success. As competitors for European trade, American dairymen can not afford to neglect attending this exhibition, and learning what they can of improved methods and apparatus. The committees in charge comprise many of the leading dairymen, and the prizes offered are liberal enough to call out many exhibitors. The entries are numerous and important, many being from foreign countries. The classes include 8 of butter, 4 of cheese, and one of implements. The sum of \$500 is also offered in premiums for dairy cows, including all the prominent breeds in use in this country. Altogether it is an occasion that should call out the milk, butter and cheese producers in full force; and even if the fair should be a failure, a result we do not anticipate, it will teach us how to organize one on a better, more successful basis.

Editorial Correspondence From the Far West.

The Seminole Gold and Silver Mining Co.

The comments of the September *American Agriculturist*, upon "The Seminole Gold and Silver Mining Co.," are greatly relished in Rawlins, Wyoming Ter., where the so-called "mines" are located. The talk on the cars and elsewhere, is to the effect that certain parties dug a hole in the ground, some forty miles from here, sufficiently deep to conform to the territorial mining law; they then organized a stock company, and have since been selling the stock in the Eastern and Middle States, in large and small lots; furthermore, that the whole head and front of the Company is one J. M. Pattee, who formerly ran a lottery at Omaha, Neb., and afterwards at Laramie, Wyoming, at which latter place his circulars were excluded from the mails, thus causing a cessation of his business. Whatever may be the truth of these statements, there can be no mistaking the meaning and intent of the following language which we find in the "Laramie Sentinel" of late date, an influential journal, originally induced to speak favorably of the enterprise: "A SWINDLE.—We are frequently receiving letters asking for information about the SEMINOLE GOLD AND SILVER MINING COMPANY. We can't answer these letters—there are too many of them. But we will state in the most public manner possible, that the Seminole Gold and Silver Mining Company, J. R. Brown, President, with headquarters at Rawlins, W. T., IS A PURE FRAUD, SWINDLE AND STEAL. J. M. Pattee, of lottery fame, is at the bottom of it. THERE IS NO MINE, NO MILL, NO MACHINERY THERE, and never will be, and every man who purchases stock in it, is merely contributing to a lot of dishonest Dead Beats, who are making their living by gulling the public. If any one has any doubts on this score, we refer them to the Governor, the Judges of the Supreme Court of Wyoming, or any other responsible party."

Big Mormon Crops.

Wheat fields were frequently pointed out to us in Northern Utah, which had yielded, this season, from 50 to 55 bushels per acre, and we were shown potatoes of the "Peerless variety," raised by John Bowman of Uintah Station, Utah, which weighed from two pounds to two and one-half pounds each. The crops all through Utah, particularly in the Cache Valley, have been large this year.

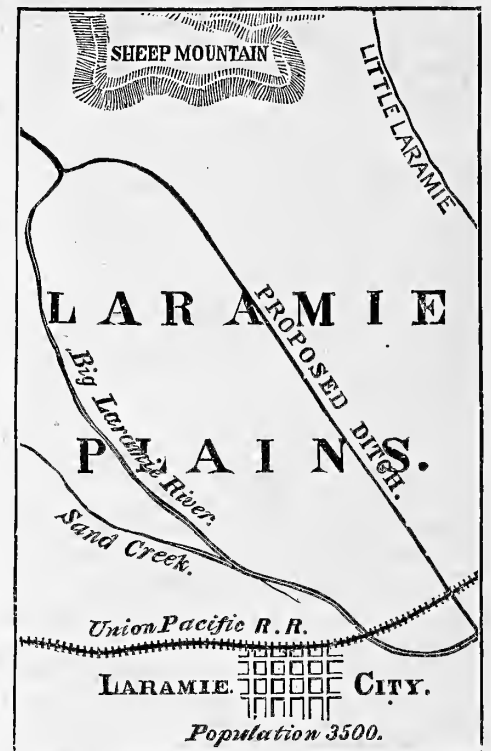
Plenty of Game.

During the past few years, the far Western States and Territories have taken measures to pre-

serve the game from the forays of unfeeling Nimrods who mercilessly slaughter wild animals either for the love of killing, or to be able to boast of the number of their victims. As the result of these protective measures, there is, this fall, a very perceptible increase in game, especially in Wyoming and Utah Territories. Employees of the Union Pacific Railroad tell us that they never before saw so many antelope on the plains, while back in the foot hills and mountain ranges, elk and deer are abundant. In riding, during the month of October, from Rock Creek to Laramie, antelope, wolves, mountain grouse, sage hens, wild geese, ducks, etc., were to be seen from the cars almost constantly. The favorite point for English hunters in this country is about seven hundred miles west of Omaha. Here they leave the railroad track, and strike back forty miles to the Sweet Water regions. Having procured a guide and spent a few days at the hospitable ranch of Mr. Tim Foley, who is one of the largest and most successful cattle growers in the world, they push on to the Wind River country northward, in quest of the larger game there is to be found in that region. A small party of these English gentlemen returned from the Wind River country, a few days ago, with twenty-one bear skins and the heads of numerous elk, mountain sheep, etc., which they were conveying to England as trophies of their American hunting excursion.

Irrigation in Wyoming Territory.

Of the one hundred thousand square miles of area in Wyoming Territory, it has been computed that over seventy thousand square miles are adapted for grazing purposes only. It is not improbable, however, that much more land may be brought under cultivation, so that Wyoming may be classed in the future as an agricultural, as well as a grazing country. The famous plains of Laramie contain nearly three million acres of grazing lands, over which are now scattered fully fifty thousand head



of stock. Some of the leading citizens of Laramie have organized themselves into an association for the purpose of irrigating and raising crops on that portion of the plains lying north-west of the city. The name of the association is the "Pioneer Irrigating Canal Co.," and the leading spirits in the work are Judge J. W. Donnellan, Rev. D. J. Pearce, Baptist Minister, Rev. H. L. Myrick, the Episcopal Minister, and E. Iverson, Pres. Wyoming National Bank. The enterprise is not undertaken for money-making purposes, but has its origin in a desire to supply the city with farm and garden products, which are now brought a long distance by rail from the States at considerable expense and trouble. As will be seen from the accompanying illustra-

tion, a ditch is to be dug, fifteen feet wide, three feet deep, and thirty miles long, beginning at a point on the Big Laramie River, thirty miles southwest of the city, near Sheep Mountain, and extending to the same river at a point a short distance north of Laramie.

From the main ditch, secondary ditches are to be dug, by means of which fully fifty thousand acres of land west of the city, lying between the river and the main ditch, will be irrigated and brought under cultivation. At present, this tract is an open plain, dotted here and there with ranches and droves of cattle and sheep. The cost of this system of ditches is computed at from ten to fifteen thousand dollars. The engineer, Mr. F. C. Avery, who has superintended similar irrigation enterprises in Colorado, is sanguine that it will be attended with fully as successful results, notwithstanding the plains here are considerably higher than in Colorado. The citizens who are to bear the expense of this ditching system, are now locating whole sections of land within the proposed area, under what is known as the "Desert Act or Law." Any one has a right, under this Desert law, to appropriate six hundred and forty acres of desert land at \$1.25 an acre, by paying 25 cents per acre cash, and an additional \$1.00 per acre within three years' time, upon furnishing proof of his having reclaimed the land by irrigation. Furthermore, a revenue will accrue to those who supply the funds, from the sale of the water rights. The right to draw water enough to irrigate one hundred and sixty acres, is worth considerably more than the original cost of the land. At Fort Collins, in Colorado, this right is valued at from \$800 to \$1,000.

This particular valley, extending from the Medicine Bow River to the head of the Laramie Plains, and being about one hundred miles in length and fifty miles in width, is specially adapted for irrigation on account of the numerous water courses. The Big Laramie winds about through the valley for over one hundred miles, and the North Platte River, the Medicine Bow, Rock Creek, Dutton Creek, Little Laramie and other streams, flow through it. Should this first attempt at irrigation by the citizens of Laramie, meet with the predicted and anticipated success, it will undoubtedly be repeated on a large scale all over the plains.

During the past summer, potatoes, peas, and other vegetables have been successfully raised here, in the gardens of Laramie by means of the irrigation afforded through a copious spring just east of, and 200 feet higher than, the city.

Fish Culture in the Far West.

There is no industry which promises more liberal returns upon the investment than the propagation of fish in the far Western States and Territories, where there is a great scarcity of this kind of food. An enterprising fish breeder, who would construct ponds and raise superior kinds of fish for the market in either Colorado, Nebraska, or Wyoming, would be certain to realize very handsomely on his outlay. The prairie regions being subject to surface flowage every year, ponds should be constructed as remote as possible from points liable to overflow. In building them, care should be exercised to secure the cool healthful waters from the mountain streams. The nearer such ponds are to the foothills or mountain slopes, the better.

With the exception of mountain trout and some other fish, the supply in the far West is brought from the lakes and other remote points. Such fish are naturally expensive and not always so fresh and wholesome as might be desired. From inquiries made on the ground, we are satisfied that there is a demand here for fresh fish, in the supplying of which lies a fortune for enterprising fish culturists. Owing to the abundance of beef, the demand for fish as a change of diet is very general.

Kansas—Recent Immigration.

Kansas is smiling with prosperity, and her people are cheerful and happy over the improved condition of affairs. In travelling through the entire State, visiting the agricultural centres, the cities, villages, and other points of interest, I have heard but one expression of opinion, viz.: that hard times are over and prosperous times have come again.

The immigration into the State for the year I compute at one hundred and five thousand, basing my figures upon conversations I have held with the leading authorities, including the Governor, the State Board of Agriculture, and the various Railway Land Commissioners. While portions have been distributed through the eastern counties, the great bulk of this immigration has pushed on to the central and western counties, following the railway routes across the State. The sales of the Atchison, Topeka, and Santa Fe Railroad for the ten months ending with October, were 208,626 acres, as compared with 57,439 acres for the corresponding period last year. The sales of the Kansas and Pacific for the ten months were 182,000 acres, and the estimated sales for November were 20,000. In addition, there are the very large amounts of Government lands sold, preëempted, etc., of which no official aggregate data have yet been made up.

Prior to 1871 there were no settlements one hundred miles west of Topeka. During the years that have intervened since then, one hundred thousand people have moved into the region beyond upon the lands tributary to the Kansas Valley, as far as Fort Dodge. This population is scattered over an area of two hundred miles in length, and an average width of seventy-five miles. It lies about 37 miles each side of the Atchison, Topeka, and Santa Fe Road. The immigration is likewise following westward with similar rapidity on the line of the Kansas and Pacific Road. Saline County, for example, which ten years ago was roamed over by the buffalo, this year produces a million and a half bushels of wheat. Ellsworth, one hundred miles west of Salina, which, in 1868, was the happy hunting-ground of the Indian, has this year raised from twenty to twenty-five bushels of wheat per acre.

Changes in the Climate.—The Crops.

The rapid climatic changes are converting barren into good arable land, and it is now thought that in five years' time, good crops can be produced at Fort Wallace, 235 miles west of Salina, where the country is now seemingly a desert waste. The long, blue-joint, or prairie grass, is moving westward at the rate of five miles annually in advance of the population. It grows from two to three feet high, and serves to protect the soil from the direct rays of the sun, and after a rain storm, answers as a mulch, in preventing the ground from becoming hard and dry. On one section of land in Elk County, where eight plows were "disabled" in endeavors to break up the ground a few years ago, good crops are now being raised. Although the rainfall has not increased so much as has been generally supposed, it has increased very materially. Rain, falling upon broken ground, remains much longer than when falling on hard, dry soil, so that the extreme dryness experienced ten years ago, is not now felt in Kansas. Should Western Kansas and Eastern Colorado, included in what has hitherto been known as the Great American Desert, be ultimately brought under cultivation, it would certainly be a matter of general interest, as indicating what climatic changes man can accomplish in a sterile land.

The inhabitants of the eastern counties express considerable dissatisfaction because the people coming into the State, push on beyond them. They claim that the impression among them that their counties are burdened down with bonded and other debts, is not borne out by the facts; furthermore, that just as good lands can be purchased in the eastern counties at as cheap, or almost as cheap rates, as can be had in the middle and western counties hundreds of miles further west. Governor Anthony and other prominent men in the State, interested in its welfare, have stated to me that the people of Kansas do not sympathize with any "philanthropic" or other movements in the Eastern and Middle States for transferring a dependent population to Kansas, where there is room only for those who can take care of themselves.

The crops of Kansas have generally shown a fine average yield. The wheat crop has been the largest ever raised in the State. The oats have been good, and potatoes very good. Corn was affected by the dry weather. A large crop of broom corn has been raised this season. The following tables indicate the quantity of Kansas cereals as compared

with last year. The figures for 1877 are official, as likewise are those for this year (1878), furnished me by the Hon. Alfred Gray, Secretary of the State Board of Agriculture, whose well known thoroughness is a sufficient guarantee for their accuracy.

KANSAS CROPS.	1877.	1878.
Wheat	14,316,705 Bush.	32,315,358 Bush.
Corn	103,497,831 "	89,324,971 "
Oats	12,768,488 "	17,411,473 "
Rye	2,528,054 "	2,732,008 "
Barley	1,875,323 "	1,562,793 "

These returns of the crops for this year, are based upon the monthly reports which the county officials are required by law to make to the agricultural authorities of the State. A portion of this correspondence, describing the great Texas Cattle Drive, is given on page 450 of this number.

Science Applied to Farming.—XLVII.

Fish as Food for Animals.

"The cattle at Provincetown feed upon fish with apparently as good relish as upon the best kinds of fodder. We have seen the cows at that place boldly enter the snarf, in pursuit of the offal thrown from the fish-boats on the shore, and masticate and swallow every part but the hardest bones. A Provincetown cow will dissect the head of a cod with wonderful celerity. She places one foot upon a part of it, and with her teeth tears off the skin and gristly parts, and in a few moments nothing is left but the bones. It is said that some cows there. will, when grain and fish are placed before them, eat the whole of the fish before they will touch the grain." *Barnstable (Mass.) Journal, Feb. 7, 1833.*

We have accounts of the feeding of fish to stock in the East, centuries ago. It is a regular practice in northern Norway, where dried codfish are used to piece out the stock of hay that does not suffice for the long winter. In 1856 Prof. Stoeckhardt, of Saxony, received a sample of Norwegian fish-guano, which he fed to a half-year-old pig "which did exceptionally well on this northern food."

Experience of Farmers in Maine.

The same practice prevails on our Atlantic coast, particularly in Maine. The Maine Agricultural reports refer frequently to this use of fish-pomace, or fish-scrap, the material which, when dried and ground, makes fish-guano. Mr. W. D. Dana says:

"Fish pomace, or the residuum of herring after the oil is pressed out, is greedily eaten by sheep, swine, and fowl; and probably pogy [Menhaden] chum would be eaten as well. Smoked alewives and frost fish also furnish a food palatable to cattle. Sheep thrive well, get fat and yield heavier fleeces when fed on this pomace than when fed on anything else produced in this section of the State. Careful and observing farmers who have fed it, assert that it is of equal value with good hay, ton per ton, and that its value for manure is in no degree diminished by passing it through the living mill, and thus reducing it to a much more convenient state for applying. If it could be sufficiently dried, without other substances, to prevent putrefaction, it would form a valuable article of cattle feed in regions from which it is now excluded by the expense of transportation and its own odoriferous nature."

Mr. M. L. Wilder says of his experience in the use of scrap as a food for sheep: "I believe fish offal to be not only cheaper, but much superior to any other kind of provender I have ever used for this purpose. I keep about one hundred sheep, and have fed fish offal to them for the past ten years. The offal is made from herring caught in weirs, salted the same as for smoking, cooked, and the oil pressed out, leaving a pomace for which the sheep are more eager than for grain. For the last three winters I have kept my sheep on threshed straw, with one-half pound of dried fish-pomace per day to each sheep, or one pound of green (as it shrinks one-half in drying), and they came out in the spring in much better condition than when fed on good English hay with corn. I consider the dry pomace worth as much as corn, pound for pound. When I have had enough to give them one-half pound per day, I have found that the weight of the fleeces was increased one-quarter, and not only that, but also the carcass in a like proportion; the weight of the fleeces per head averaging from five to seven pounds."

Why Fish are Nutritious.

Fish and fish refuse consist essentially of flesh, oil or fat, and bone. The fleshy portions, which contain nitrogen, are similar in composition to lean meat and to the albuminoids—gluten, fibrine, etc.—of plants. The fish oils or fats, too, are essentially the same as those of hay, corn, oil-cake and other vegetable foods. The bone contains albuminoid matter; "gristle" is quite digestible and nutri-

tious, and phosphate of lime, which, though greatly in excess of the needs for food, does no harm. The albuminoids and oil are especially valuable in fish, because (1) they are more easily digested than in most vegetable foods; (2) they supply in concentrated forms just what poor foods, such as straw, corn-stalks, and marsh and late-cut upland hay, lack. These latter are inferior to early-cut hay or grass, not merely that they contain less nutritive materials, but especially because they have not enough albuminoids and fats. Hence the utility of feeding oil-cake and cotton-seed meal with poor hay, corn-stalks, and straw. Oil-cake and meal were formerly used for fertilizers, until farmers found they were excellent fodder, and that what was not made into flesh, fat, bone and milk in feeding, was worth more for manure, because in more available forms than before it had been pulverized and decomposed in passing through the animal. There is no reason why the same should not be done with fish refuse, except the difficulty of making it palatable, and this obstacle is not hard to overcome.

Experiments with Fish for Fodder.

The earliest accurate experiments on fish as food for animals that I have seen, are reported by Mr. Lawes, of Rothamsted, England, in 1853. Various foods, including bean, maize, and barley meals, and dried Newfoundland codfish, were tested. Mr. Lawes says: "In the two series.... where we have a comparatively small amount of non-nitrogenous matter consumed, the food consisted, in a large proportion, of the highly nitrogenous codfish; and in both of these cases we had not only a very good proportion of increase to food consumed, but the pigs in these pens were very fat and well ripened, and hence a large proportion of their increase would be real dry substance.... This result is, in itself, interesting; and it may perhaps point to a comparatively greater efficiency in the already animalized protein compounds [albuminoids] supplied in the codfish than in those derived, as in the other cases, from the purely vegetable diets."*

The high cost of grain foods in Europe—farmers there have to look to Russia, India, and America for their supply of oil-cake,—has led the German Experiment Stations to examine the question of the value of animal foods, scraps, dried blood, and fish as a substitute. Numerous feeding trials have been made with sheep and swine, to test the digestibility of dried flesh, blood, and Norwegian fish guano, and their nutritive value, as compared with vegetable foods such as pea-meal, oat-meal, and potatoes. The animals were fed during different periods of two or three weeks each, with different foods and mixtures, and careful weighings made of both food and excrements. Each series occupied several months, and was made with an amount of labor and accuracy that would be simply astonishing to most farmers in this country. Wolff found sheep to digest 92 per cent of the albuminoids, and 97 per cent of the fats of *flesh-meal*, and concluded, with Wildt, that animal albuminoids and fats may serve just as well as vegetable for fodder. From several trials with sheep, Weiske and Kellner conclude that fish-guano may be fed with profit. At first the animals did not relish the fish, but when mixed with oat-meal they accepted and soon got to eating it clear very greedily. They digested 90 per cent of the albuminoids and 76 per cent of the fats of the fish. It is agreed that these animal foods are as nutritious as the most concentrated vegetable foods. A large number of farm trials in different parts of Europe bring the same result. An accurate experiment by Professor Farrington, of the Maine State Agricultural College, leads to like conclusions.

On the whole the testimony is unanimous as to the high value of fish guano as food for sheep and swine. There is no reason why it should not be equally good for neat cattle, particularly young stock. One important element of the profit from such foods is the manure. The transformation of fish by birds into Peruvian guano makes it more soluble, and worth more for manure. Kellner found that the same is true when fish is fed to sheep.

To make meat-scrap, dried blood, or fish most profitable for feeding, the first point is to get a

wholesome product. This can be done by proper preparation. Common salt, or, perhaps, better, German potash salts, would aid to this end, and increase the value of the manure. The next point will be to feed them with poor hay, straw, and corn-stalks, and thus save the better hay for use where it is most needed. By such economizing of fish wastes millions of dollars may be saved to the farmers of the country. W. O. ATWATER.

Wesleyan University, Middletown, Conn.

How to Tell the Age of Sheep.

In buying or in selecting sheep for keeping or fattening, it is important to know their ages; this can be easily and quite accurately determined by



Fig. 1.—3 MONTHS. Fig. 2.—12 TO 18 MONTHS.

examination of the teeth, and there is no other way of getting at the age with any degree of certainty. Sheep, like cattle, have no upper front teeth, but the gum is hardened into a tough pad. The lamb, at birth, shows but two incisor teeth, often none; but in about 25 days the full set of 8 "milk teeth" has appeared, and at 3 months the "dental arch" (the front teeth) is full and round, as in figure 1. Between a year and 18 months the two middle milk teeth are replaced by broad permanent ones, as indicated in figure 2. Towards the age of two years,



Fig. 3.—2 YEARS. Fig. 4.—3 TO 3½ YEARS.

the teeth next on each side of the middle drop out and their place is taken by broad teeth, as shown in figure 3. At this stage the jaw shows four broad teeth in the middle and two narrow ones on each side. Figure 4 shows very nearly how the teeth look at 3 to 3½ years old, there being two more broad teeth, or 6 in all. Now the last remaining

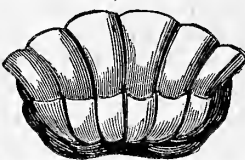


Fig. 5.—FRONT VIEW OF FIGURE 4.

milk teeth are so small as to be hidden behind the broad ones, and scarcely visible, when looking at them on a level and in front (fig. 5). At 4 to 4½ years these last milk nippers are replaced by the permanent ones (fig. 6); but not until 5 years or after do they attain full size. After this age the teeth gradually wear away, and at nine years are much worn, as in figure 7.

There is considerable variation, however, in the teeth, according to breed of the sheep and the way in which they are kept, but a little practice will enable one to estimate their ages quite accurately.



Fig. 6.—4 TO 4½ YEARS. Fig. 7.—9 YEARS.

An illustrated chart has recently been published, giving the ages of the horse, cow, sheep, pig, and dog, that is of great value to farmers, every one of whom might recover its cost many times a year by its use. It is an instructive, attractive and valuable chart to post up in the stable or office.*

* "Chart of the Age of the Domestic Animals." Published by Orange Judd Company. Price, \$1.00, by mail.

More Pleasant Figures to Read.

"We owe a *Thousand Million Dollars* to foreign countries for money borrowed to carry on the war, to build railroads, and for articles imported for use and consumption here," was the statement only three or four years ago, and the actual amount of indebtedness was even greater. At least sixty million dollars had to be sent abroad each year, to pay the interest on this sum. What more pleasant reading, than to learn that, while supporting ourselves, and even reducing the aggregate of home indebtedness, individual, municipal, and national, our people are rapidly wiping out this foreign debt by economy in luxuries and in the expenses of living, etc., and by producing more and more to send to other lands—by increased effort, by developing the agricultural resources of our great country, and by the blessing of Providence in giving us magnificent crops.... In the *American Agriculturist* for September, we showed that during the year ending July 1st, our country exported of its products \$261,744,579 more than we imported; in two years, an excess of \$428,234,596; and in five years, **\$657,218,495**. In our October number, we presented the figures showing that from Aug. 1866, to Aug. 1878, we had reduced our National interest bearing debt, \$571,852,395 (or from \$2,381,530,291 to \$1,809,677,900), and our annual interest payment in the same time, from \$150,977,698 to \$95,181,007, an annual saving of nearly \$56,000,000; and our annual taxation from \$488,274,465, to \$240,753,305, or more than half.

The good work still goes on; our former figures were made up to June 30. We now have the official statistics to Oct. 1st. Exclusive of specie, the exports during September were \$57,924,808, and the imports only \$37,399,541, a gain during the month of over Twenty Million Dollars (\$20,525,267). The total exports from January 1st to October 1st, 1878, were \$533,729,118; the imports during the same time, were only \$324,598,631, a gain in 9 months of **\$208,808,527**. At the same time, the large products of our gold and silver mines are being retained in the country, by so much not only increasing our solid wealth, but adding to the reserve for resumption of specie payments. The yield of the mines for our last fiscal year was about \$94,000,000, or \$46,226,106 of Gold, and \$46,726,214 of Silver. (About \$2,500,000 of gold and \$3,000,000 silver are consumed in the arts and manufactures. The total stock of gold and silver in the country July 1 was estimated at \$332,443,947, an increase of about \$90,000,000 during the year, to which \$26,000,000 was added from the mines from July 1st to October 1st.)

The non-official reports show that the gain is still going on, though temporarily lessened a little in October by the Scotch Bank failure and consequent financial disturbances in Great Britain, which, for the time being, checked orders for breadstuffs. The business is reviving again now. Great Britain has still large requirements for breadstuffs, with extraordinary small supplies to come from Hungary, India, and Australia. From Jan. 1 to Sept. 27, British India exported only 1,193,706 bushels of wheat against 10,485,158 bushels in the same time last year. France is also a large buyer this year, her imports of wheat during September alone being 2,339,520 bushels this year, against 638,824 bushels last year.—The cotton crop is the largest ever produced in this country, and despite the retardation by yellow fever, which has now happily disappeared, the exports in ten weeks from Sept. 1 were this year 493,887 bales against 341,751 bales during the same period in 1877.—

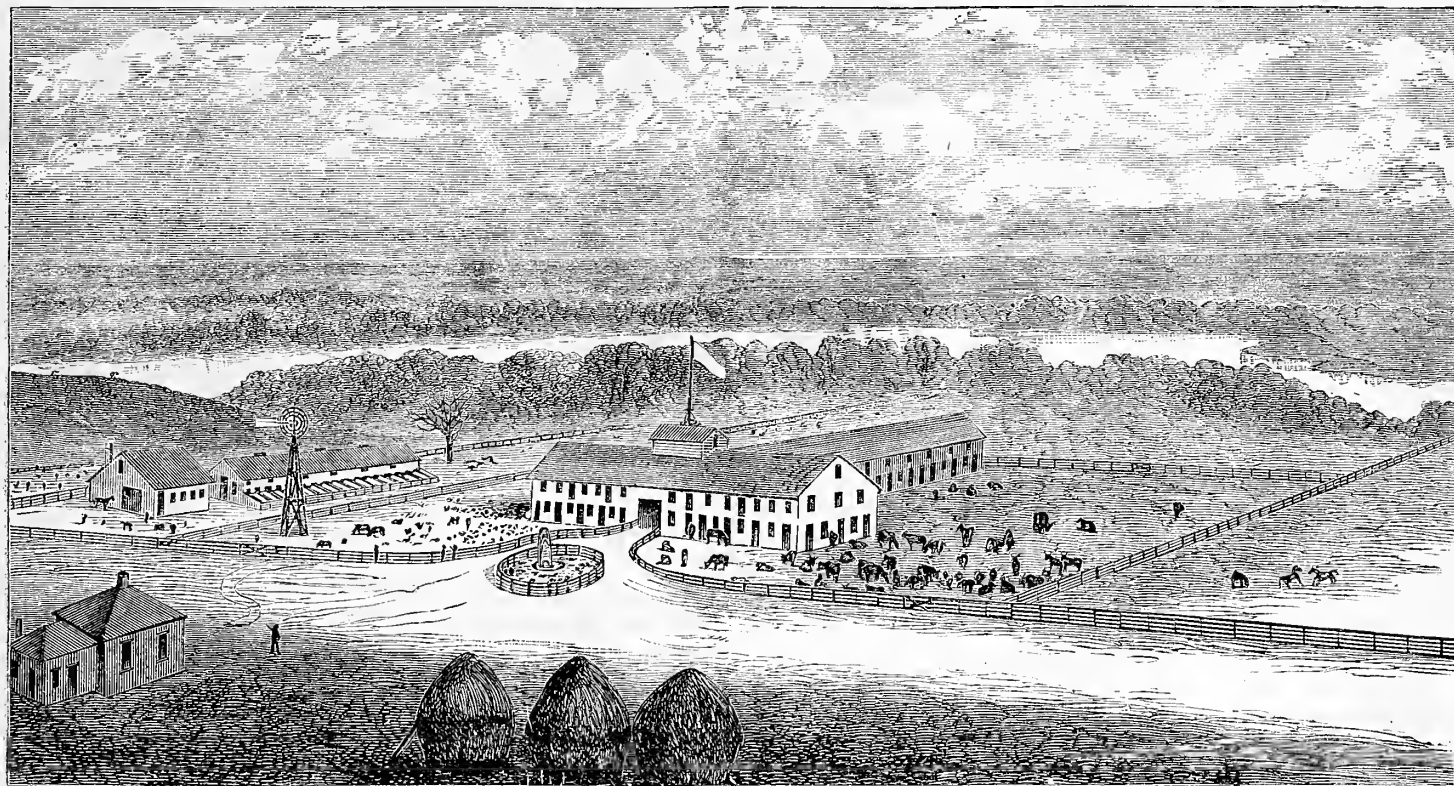
Surely there is a hopeful outlook for all classes. While very high prices for corn and wheat can not be expected, it is satisfactory to learn that there will be a demand, at some price, for all the immense products of the past two harvests, so that the country will be cleared, and a demand exist for the next year's harvest. Our agricultural readers can with hope and confidence lay out their plans during these leisure winter days for putting in a good area of spring crops. Let them not forget that the best paying crops are those in which the largest yield is obtained from the smallest area. We will do our share in showing how this is to be accomplished.

A Nebraska Stock Farm.

Our associate, who is now in the West, thinking it would interest farmers elsewhere to see how those who are occupying the newer States arrange their buildings and lay out their farms, selected as a typical example, the stock farm of T. H. Leavitt, Esq., at Riverside, Nebraska. This seemed to be

home-bred, though all of choice families and pure blood. There are about as many sheep, Cotswolds, beautiful animals; and about 250 head of cattle. Of these, upwards of 50 head are Shorthorns of pure blood, selected with care from noted herds in Canada and various States, from Massachusetts and New York, to Missouri and Colorado. The noble bull, "7th Baron Morley, No. 18,954" (pure Princess), which stands at the head of the herd,

Building material is here somewhat more expensive than at the East, but can hardly be rated high, while labor of all kinds is low. Feed for stock is very low; hay at \$1.25 to \$2.50 per ton; corn, 15 @ 20c. per bushel, and other things in proportion; while the products of the dairy, the stable, and the pens, command very nearly eastern prices. The brief narrative of this farm and the facts we have given, may serve to show that the West has sub-



VIEW OF THE BUILDINGS ON A NEBRASKA STOCK FARM.

so beautifully situated, as well as carefully planned, that he sends a ground plan of a portion of the estate, which will give a better idea of the relative positions of the buildings, yards, etc., than would the general view alone. This view, from sketches and photographs, was taken from a point opposite the lower right-hand corner of the plan. The following is a brief history of the estate, which is situated three miles southwest from Lincoln.

In 1865, thirteen years ago, an enterprising young man from Michigan located on this spot. Within a range of 5 or 6 miles, where now there is a population of well nigh 10,000, about a dozen others had made similar claims of Government Land. At that time, a band of Pawnee Indians, 300 strong, were encamped just west of them, and deer, antelope, wolves and other large game were abundant. Six years later, the property passed into the hands of a Vermont farmer, and the present proprietor is a Massachusetts' man; the original pioneer owner being now a Government officer at Washington. The farm comprises 250 acres. The stock, aside from work teams, consists of about 250 Berkshire swine, some imported, but mostly

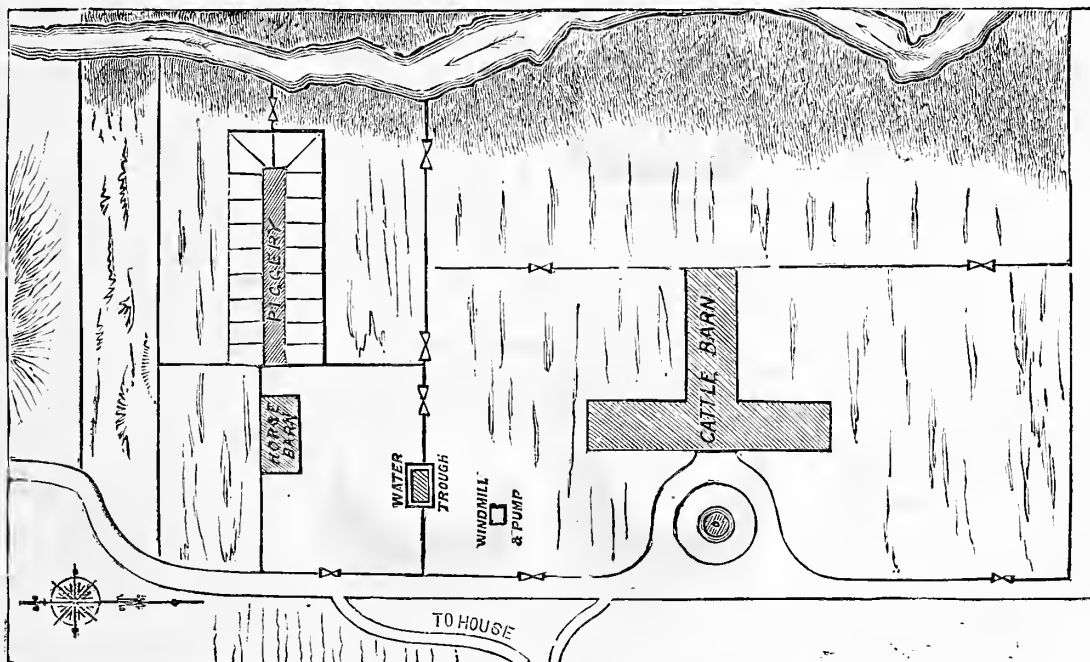
and several of the females, were bred in the State of New York. The buildings are substantial and commodious, neat and attractive in style, and arranged and fitted with every convenience for the thorough, economical, and profitable prosecution of the stock business. The product of the dairy for the past season has been about 20,000 lbs. of cheese, of quality which compares favorably with the product of our best eastern factories. The region is

substantial attractions for eastern men and eastern capital, no less than that the East and West have common interests which are worthy of more consideration than we are able to give them in this place.

Time to Select Breeding Stock of Poultry.

—The surest way to get good healthy chicks, and the best eggs for setting, is to select the breeding stock early in the season, before they are mature.

A flock selected in November, and given quarters where they can choose the house or open air at will, growing up together and naturally drifting into productive life, are always found to produce the best progeny, being more even in type and color. With such timely selection, and care in the feeding not to let the stock get too fat, nor on the other hand too poor in flesh, are among the secrets in securing fine chickens. The breeder must have perception enough to know when his fowls are over or under fed. Old and young poultry



PLAN OF THE BUILDINGS, YARDS, ETC., ON THE STOCK FARM OF T. H. LEAVITT, RIVERSIDE, NEBRASKA. The principal buildings are designated. The pens in the piggery open into small yards, which communicate with the larger yards at each side. In front of the barn is a fountain, surrounded by a fence and forming a circular yard for calves.

well settled, highly cultivated, and well stocked. The last wolf about here was killed in 1876. Prairie Chickens, Plover, Quail, Wild Geese, Ducks and Brandt, in their season, are still abundant.

should not be cooped together, as food sufficient to keep the young, growing pullets in a laying condition, would so fatten the old ones that they would lay but little and perhaps not at all.

Among the Farmers.—No. 35.

BY ONE OF THEM.

At the Agricultural Fairs.

The most pleasant fairs are those at which there is a mixed attendance of city and country people. At Elmira, for instance, there was a considerable sprinkling of mechanics and shop people, and of young folks, to whom pigs and poultry, sheep and cattle, mares and colts, as well as many products and implements of every-day farm life, were a genuine curiosity. It was still more so at Waverly, situated as it is within a few minutes ride by the cars of four New Jersey cities, and but half an hour away from New York. Here city folks were by far in the majority, and it was very funny to see how "green" sensible people may sometimes be about things with which they are not familiar. At the Somerset County (N. J.) fair the country people so far outnumbered city folks, that the latter were lost in the crowds of the tillers of the soil with their wives and sweethearts. And I am sure that the beaux whose talk is of cattle, received as many smiles and favors, as those who conversed about the picturesqueness of rural scenes.

Horse Trotting.

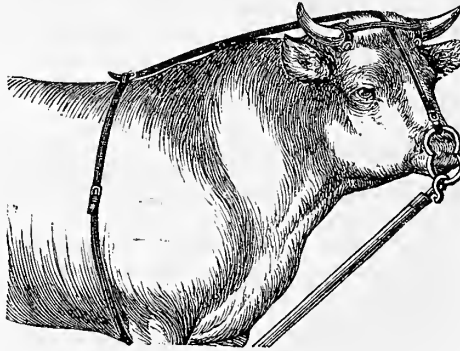
The dignified old Agricultural Society of the State of New York is the only one I know of which will not make use of the attractions of a trotting course, and regular trotting matches to "draw a crowd." Everywhere else the trotting course is the principal attraction. I do not like it, but it is claimed that the Societies could not live to hold fairs without it; and certainly the trotting matches, as conducted by many of the Agricultural Societies, have little that is low and immoral about them, while thousands of people are drawn together who not only enjoy the day and one another, but who see and learn much that is very useful and interesting. Hundreds never have time or inclination to stand or sit through a trotting match, with its vexatious delays, disappointments at a favorite's failure to win, and enjoyment of victory. Still, a good many people seem to enjoy it. Let them—the horses certainly enjoy it, the drivers are in a high state of pleasant excitement, while the judges are the only ones that seem not to have a good time, and even they have the satisfaction of sacrificing themselves for the general good. The money that pays the premiums and salaries—if salaries be paid—that cares for the grounds and erects tents and permanent buildings, all, or nearly all, comes from the people who assemble to see the trotting. It is a great deal better for the money thus to come into the treasuries of Agricultural Societies, than to swell the profits of purely racing and trotting associations. [We allow our Contributor to express his views, but we believe these horse-races, sugar-coated with the name of agricultural fairs, are wrong in principle and tendency. They cultivate an unnatural taste for horse-racing that is not healthful. That they are not necessary, is demonstrated by the New York State Fair, always one of the best and most useful held in this country.—EDS.]

How to Control a Fierce Bull

is a problem, the solution of which should be familiar to every farmer's boy. It is an old rule, never to trust a bull, no matter how gentle he may be. We have to trust him sometimes; but if one has the least suspicion that the bull has a notion "to try conclusions" with his keeper, then it is rash not to control him absolutely. A fine Ayrshire bull got the better of his owner and his groom at the New England fair, and was shot. I learned the story from his owner: how that, as he seemed quiet, he was led out into the ring, among others, without his cheek strap, and taking advantage of his freedom from that restraint he used it to his groom's sorrow, and his own destruction.

A cheek strap for a bull is a simple strap of good leather, fastening by a snap into a ring in the bull's nose, passing between his horns, where it is held in place by a strap going around them, and back to a leathern girth, to which it is buckled. The animal is led and handled by a second ring. He

can not get his head to the ground, and is consequently unable to do mischief, and perfectly manageable. I have had occasion a few times to lead a bull of two or three years old through or across the city of New York, and have done so with comparative safety by putting a girth about the body, then attaching a stout cord like a clothes-line to one or both forefeet at the pastern, passing it under the



CHEEK-STRAP FOR BULL.

girth and letting it be held by a man behind, while another lead the bull by a staff. So long as a bull thus encumbered goes straight forward, he can be prevented from running or going fast, for a vigorous pull as he lifts his feet will bring up first one foot and then throw the animal upon his knees. He can, however, turn upon the man who holds the cords, and this disarranges things for a while. But the cheek strap is not liable to any such objection. The bull soon finds out that he is powerless to do evil, and so calms down and behaves himself. There is usually plenty of space in the hole in the septum of the nose to insert a second ring, and the two rings may be left in without inconvenience to the animal. It is represented in the engraving.

Apoplexy in Horses Induced by Fright.

A horse trader came through the village last week and made an exchange with a man who contracts to dig cellars and haul stone, etc., the contractor taking a horse on trial for three days, and agreeing to pay some \$25 to boot. The horse was set to work, and every one noticed how nervously he started at the word, and how hard he pulled. Suddenly he fell back and died. It was a clear case of apoplexy, or a bursting of a blood vessel in the brain. The cause was a mystery until some one, wise in the dark doings of the horse traders, explained it. He says that when these base fellows get in trade a dull, nerveless, lazy horse, they cure him for the time being by taking him into the woods or other secluded spot, and there by whipping and yelling at him, making him pull as if his life depended upon it, followed by such lashings and beatings as puts the poor animal in mortal fear, they prepare him for sale, and warrant him for several days, or leave him on trial for three days, as in this case, well knowing that he will not get over his scare for a week. It sometimes happens that the excitement is too great, and the poor frightened animal drops dead, and is freed from his tormentors. This extremely nervous condition is easily observed, and should always deter one from purchasing. The human brute guilty of such practices should be watched, and if evidence can be obtained hand him over to the tender mercies of some kind-hearted Mr. Bergh, to be dealt with according to law.

Mr. Bergh is tender towards animals, but judicially hard-hearted towards their tormentors. The admirable Society of which he is the head, has done much to make the lives of kind-hearted people comfortable. Looking back a few years, it is easy and painful to remember the poor hard-worked omnibus and ear-horses of New York, with great galls exposed to the air, flies, and rubbing of the harness; and not these alone, but the halt, lame, and sick beasts that were made to do regular work, sometimes falling under their burdens, and often dying in the street under the blows of their drivers. How things are changed! and it is all Mr. Bergh's doings; and though he has doubtless erred sometimes, it has been on the side of mercy to the beasts.

Talks on Farm Crops.—No. 22.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"The truth is, Deacon, we must farm better. I have no heart to talk about farm crops. We must talk more about the preparation of the land,—about draining, cultivation, and manure. There is no money in poor farming."

"There is precious little money in any kind of farming, now a days," replied the Deacon, "we had a good wheat crop this year, but we can get but little for it. Barley brings a high price, and so will potatoes, but what of it? Many farmers did not get 10 bushels of good barley per acre, or 50 bushels of merchantable potatoes. High prices do not help those who have nothing to sell."

"It is the old story" said the Doctor. "Things that are easily got, are worth but little. Potatoes and barley bring a high price this year, because a good crop could not be obtained only on land in the best condition. We say the season was unfavorable. The Hessian fly hurt the barley, and the bugs defoliated the potatoes. And yet you will find on adjoining farms, or sometimes in the same field, a good crop of barley, of 40 bushels per acre, and near by a crop that is hardly worth thrashing; and so with potatoes. Now, the season is the same, the bugs and Hessian fly the same. The only difference is, that the one piece of land has been properly prepared and enriched, and the crop sown or planted at the proper time, and the others not; that is all the difference. And it is not wise to fold your hands and say, 'we had a bad season.' Better say, 'it would have paid me well if I had spent a little more time and labor and money, in making the land dry, clean, mellow, and rich.' What you want is more faith in your business."

"That is the point Doctor," continued I, "you have hit the nail right on the head. Experience and observation, prove that the only farming that pays in the long run, is good farming. I have a field that this year has produced 250 bushels of potatoes per acre. And on either side of it is land that produced less than 50 bushels."

"You have no reason to complain," said the Deacon, "you have the best crop I have seen this year, and at a dollar per bushel, your potatoes will pay you better than any other crop you raised."

"If I had farmed better, I should have found it decidedly profitable. My good crop was on a field that is thoroughly underdrained, and which I manured this spring. And the extra yield of potatoes will pay for all the draining, for the manure, for cultivation, and for the land itself."

"You want to prove," said the Deacon, "that we must drain our land and make more manure or buy artificials. I should agree with you if it was not for the cheap, rich land of the West. Freight are low, and it would seem pretty risky business to spend more money in draining 10 acres of land than we can buy 50 acres for in the West; and then every year spend from \$10 to \$15 an acre for artificial manure. Better 'go West, young man.'"

"No matter where you go," I replied, "you will find that this principle lies at the basis of profitable agriculture. You must get good crops—not only in favorable seasons, but in what we call unfavorable seasons. We must farm better. We recognize the principle in feeding cattle, sheep, and swine. We do not, with these, trust to 'nature.' We provide food for them in winter, and see that all their wants are supplied at all times. We must do the same thing for our crops. I have a private letter from Prof. Shelton, of the Kansas Agricultural College, in which he says: 'Our crops of all kinds are wonderful—surpassing anything I have ever before seen. This afternoon I figured up the yield and cost of a small field of wheat. The yield was a fraction over 41 bushels per acre, and it cost, exclusive of taxes and interest on investment, 30 cents per bushel. Our corn promises equally well. I shall be disappointed if we do not get 1,800 bushels from 25 acres. But prices are very low: wheat 60 cents, corn 18 cents, and oats 15 cents per bushel, and hay only \$2.50 to \$3.00 per ton.' "That crop of wheat in Kansas," said the Dea-

con, "sold for \$24.60 per acre. Here it would have brought \$43, to say nothing of the straw. The difference is over \$19 per acre."

"But you must recollect," remarked Charley, who is somewhat inclined to go West, "that to raise 41 bushels of wheat per acre here, we must underdrain and have our land very clean and rich, and then not get such a crop one year in ten."

"We will not," said I, "discuss this question of whether farming is more profitable at the West than at the East; it depends a good deal on circumstances. No matter where you go, there is little money to be made in poor, ordinary farming. Prof. Shelton figures out a profit of *one hundred per cent* on his wheat crop. But how is it with the farmer who raises only 20 bushels per acre? Prof. Shelton's crop cost \$12.30 an acre, and the *profit* is \$12.30 an acre. If the crop of twenty bushels cost \$10 per acre, the *profits* would be \$2 per acre."

"Yes," added the Doctor, "judging from past experience, in a year or two we should have an unfavorable season, and wheat, instead of selling for 60 cents a bushel in Kansas, will bring \$1.20. In such a year, Prof. Shelton may get only 30 bushels per acre, instead of 41 bushels, and many others instead of getting 20 bushels will get only 10 bushels. In this case, the *profits* from the 10 bushel crop will be \$2.00 per acre, and from the 30 bushel crop \$24 per acre, or twelve times as much."

"And so," said the Doctor, "you are tired of talking about farm *crops*. You think farmers should bestow more thought on the preparation of the land. This may be true, but still it is well to think about particular crops and how to manage them, and what varieties to sow and plant. There are more good farmers in the world than many of us imagine; and let me tell you, that the next ten years will see a mighty advance all along the line. Think of the enormous exportation of farm produce, and above all, of the exportation of cattle, sheep, and hogs. Think of the great quantities of artificial manures that are being used; and the farmer who uses one ton this year, will be likely to use two tons next year, and five tons the year after. This will enable him to farm better and raise and fatten more stock. He will keep better bred animals and feed richer food, and this will give him more and richer manure, and that will make him a richer and happier man. So do not be discouraged. I agree with you fully that we *must* pay more attention to draining and cleaning and enriching the land; but when this is done, we must also give attention to improved herds of animals and improved varieties of plants. Without this, the good farmers who improve the land will not get full returns for their skill and enterprise and labor."

"That is the right doctrine," said the Deacon; "and I do not think the *American Agriculturist* receives sufficient credit for the care it exercises in testing and recommending new varieties of farm crops. I place great reliance on its judgment. Its advocacy of the 'Early Rose' potato, alone, has put millions of dollars in the pockets of farmers. It was the *American Agriculturist* that first induced me to try the 'Peerless,' and though many have condemned it, I feel sure that this variety has been a very profitable one in many sections. Until last year, it was the most productive and profitable kind I raised. The Late Rose that year was decidedly the most profitable. But this year the 'Peerless' again comes to the front."

"I am glad," said the Doctor, "to hear the Deacon say so much for the *American Agriculturist*. Much more—very much more—could be said in grateful acknowledgment of its discriminating judgment in regard to the relative merits of new varieties. It deserves the thanks of every farmer, fruit-grower, and florist in the United States, or for that matter, in every land where the English language is spoken. It is a grand and noble paper—fearless, outspoken, and eminently trustworthy. It condemns the bad and recommends the good."

"I find that this difference in different years, which the Deacon alludes to, is true of other varieties. Last year 'Compton's Surprise' did not do anything like as well as it has this year. The 'Snow-

flake' is also better this year than it was last year, and I do not think there was a rotten potato in the field of this variety, or the 'Early Vermont,' 'Jones' No. 4,' and 'Genesee Co. King.' 'Compton's Surprise' suffered somewhat, and 'Brownell's Beauty' still more. The latter, however, were very large, and yielded well, and after all there was probably not over five per cent of diseased potatoes. They have the advantage, too, when they rot, they rot right through and have done with it! 'Perfection' yielded wonderfully well. This is the first year we raised it, and have not yet tested its quality. 'Jones' No. 4' we have raised for three or four years. I have not yet made up my mind in regard to its value. This year it has done remarkably well for such a poor season. It produced more bushels per acre than any other variety. It is as handsome as the 'Snowflake,' and much more productive, but the tubers are small. One of my men says that years ago we had a variety called 'Thousand in a Hill,' and this reminds him of it. If planting it early on rich land would increase its size, it would be a very profitable variety."

"But of all the varieties we have raised," said Charley, "none are quite equal to 'Genesee Co. King.' There is not a man on the farm but thinks it decidedly the best in yield and quality. It was a pleasure to dig them. They resemble the 'White Peachblow,' but yield three times as much. They are a late variety, grow vigorously, and the bugs do not injure them half as much as they do the 'Snowflake' and other kinds that have smaller vines. We ought to plant all of them next year."

"You manured part of your land, and part not; did the potatoes rot more on the manured land?" asked the Doctor.

"No, not in the least; and I am perfectly satisfied that we must manure our land for potatoes—either with good, rich, well-rotted barn-yard manure, or with artificial fertilizers, or *both*. With both, would probably be the better plan. I would draw out the manure this winter, or very early in the spring, and spread it broadcast on the land, and plow it in. The longer it is exposed spread out on the surface of the land, the better I should like it. Then apply some good artificial manure in the ridge or hill. We must give up the notion that manure rots potatoes. Now that we have to fight the bugs, we must plant potatoes on our best and richest land; plant the best and most vigorous varieties, and take good care of them. There is much money in potatoes, if we can only raise good crops in unfavorable seasons; and this we can do if we select good land, manure it well, plant early, and take good care of the crop."

About Agricultural Fairs.

The writer of "Among the Farmers" apologizes for, and almost falls in with, those who think that fairs can not be conducted successfully without the usual horse trot. Yet he quotes the N. Y. State Agricultural Society as not recognizing their necessity, though it holds one of the most successful fairs—in all that constitutes success at an agricultural fair—held in the country. Another example is

The Orange County Fair.

Until this year the Orange County (N. Y.) Agricultural Society had thought trotting to be the thing to draw the crowd needed to pay their expenses. This year, however, it voted to hold the fair at a place where there was no track, and trotting had no place on the bills. The result was, *larger receipts* than in several previous years, and a more successful exhibition in every respect. This fair also illustrated some other facts in regard to fair-grounds in general. As no trotting was to be held, a long track was unnecessary. A field of 25 acres was rented, which was bounded only by a low stone wall. On one part, where the ground was smooth, a short track was staked out with no expense for grading, for showing carriage and draft horses, colts and stallions, and saddle and walking horses. On the other portion, tents and temporary hoard structures sufficed for the show of implements, poultry, fruits, and field products, flowers and domestic articles, and pens for the live-stock. A few special police

around the borders of the field kept out intruders. This was all. The Society owns no expensive grounds or buildings, and so has no debt on its shoulders to encumber free action. The small field, which the no-trotting allowed, was convenient to the highway, and so compact that one could visit every part in a short time and not be weary and foot-sore from the long walks so often necessary on a fair-ground where the exhibit must cover much space, as a sexton scatters a small congregation in a large church, to give an appearance of fullness. The rent of the field, and the expense for tents, and police, etc., were less than the interest would be on the cost of large grounds with track, buildings, and high board fences. The grounds being open to the view of the public from the highway, wore a bright and inviting look that must have drawn many who would not otherwise have attended. The fair was such a success, that it was at once voted to follow the same course next year.

A New Departure in Premiums.

It is the usual custom to offer small premiums of \$1 to \$2 for "the best cow," "the best three sheep," etc., of each of several breeds, and natives or grades. So it was at the Orange County Fair, until this year a "Friend of Agriculture" offered several special premiums, among them the following: "For the best herd of 5 Ayrshire cows, \$10.00," and the same for Dutch or Holsteins, and for natives or grades. "For the best flock of 10 or more ewe sheep, \$10.00; particular attention to be paid to mutton qualities as well as to wool bearing." "For the best acre of wheat harvested the present year, \$6.00; competitors to exhibit a bushel of the average product of the field, and to furnish a sworn statement as to cost, yield, and methods of cultivation." "For the best collection of implements exhibited and kept for sale by any dealer within the county, \$15.00; second ditto, \$10.00." The donor argued that any man might have one 1st prize cow in an otherwise poor herd, while it is for the interest of agriculture to encourage the keeping and exhibition of good *herds*. For sheep the same argument holds; and it was desired to create the impression that mutton production is as important as wool in sheep husbandry. The amount offered was concentrated in a few things which were of most importance to the agriculture of the county, instead of dividing the money among an endless number of comparative trifles. Milk records and pedigrees were asked for in connection with the cows exhibited, on the ground that the cow's history and performances were as important as her looks. The result of those special offers was the calling out of 156 cows—far exceeding the usual number—and about 60 sheep. The total amount of these premiums was only \$90, but they were distributed in such a way as to be influential in *what* constituted a large portion of the exhibition.

Many believe it desirable to have a great variety of premiums, so as to enlist and interest the largest possible number of persons, and to encourage small farmers. Others aim for ample permanent grounds and buildings. We describe this particular fair, because it presents the other side of the subject, and may be worthy of the consideration of the hundreds of Societies that will soon be making plans for the next campaign. Of course modifications will be required to suit the needs of any particular locality.

What Underdraining Did.

One of my neighbors made an experiment in underdraining seven years ago, with very satisfactory results, which are worthy of record. The soil was originally good, but had been much neglected for many years, and yielded small profit under the old style of management. The lot selected for drainage comprised eleven acres, the lowest part of it a swale, sloping to the north, and the east and west sides heavy moist land that yielded weeds and coarse grasses. It was estimated to be worth *not over five dollars an acre* when taken in hand. A main drain of six-inch tile was put through this field, four feet deep, with lateral drains of two-inch tile, twenty-five feet apart and two and a half feet deep. The whole cost was about \$50 an acre, or

\$550 for the eleven acres. This included everything—opening ditches, cartage, tile, laying tile, and superintendence. As the fall was good, there was a complete drainage of the lot, the water passing off into the ditch in an adjoining field. These drains were put down seven years ago. The first year after the drainage, the land was plowed, manured with 350 loads of stable and yard-manure, and sowed with corn for fodder, and seeded with timothy in the fall. The crop of hay the first year was two tons to the acre. Allowing it to be worth \$10 a ton standing, there is seven per cent interest on the \$55 invested in land and drains, and some return of capital. There has been no manure applied to the land, except that on a few small patches, where the seed failed to catch, there was one application of liquid manure. There has been a steady increase of grass until this year, when 39 tons, or

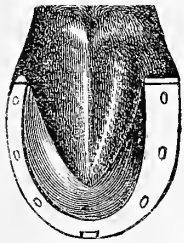


Fig. 1.

3½ tons to the acre, were taken from the field. The hay was well cured, and weighed on platform scales, so there is no guess-work about the yield. With the same estimate for the hay, this is a return of \$35 upon the original cost of \$55 for land and drainage. As there has been no outlay for manure in six years, with a steady increase of productivity, it follows that the drainage has been gradually improving the land. A layer of soil and subsoil some two feet in thickness, formerly so saturated with water as to be useless, is now penetrated by the air, by the rains, and by the roots of grasses in search of their appropriate food. As the experiment shows, rich stores of plant-food became available every year, and with proper handling may prove inexhaustible. In such a heavy growth of grass, there must be a corresponding increase of roots, and the sod must be growing richer. The experiment is a strong argument for the draining of swales. CONNECTICUT.

[Our correspondent writes that the aftermath has not been cut from this field, or the meadow grazed, since the drainage, and infers that this has considerable to do with the large crops obtained. But he wisely adds that it is uncertain how much of the gain is due to the improved condition of the soil from drainage, and how much to the non-cutting of the aftermath. We have in mind a hill farm

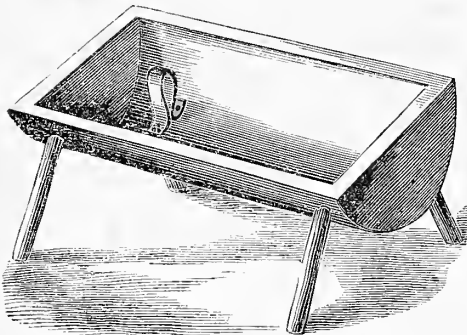


Fig. 2.—TROUGH FOR WEANING CALVES.

that cuts 250 tons of hay per year from only 80 acres in grass. Two crops are removed from nearly or quite all of this area, and three crops from a considerable portion. The owner asserts that he could not obtain so much from a single cutting, and he had to begin, of course, with one crop. In the experiment described above by "Connecticut," we declare in favor of the drainage as being the factor which gave the increase.—EDITORS.]

Hints and Helps for Farmers.

SHOE FOR INTERFERING HORSES.—"A Subscriber" sends a sketch (from which we have made the engraving, fig. 1) of a shoe which he has devised and tried successfully to prevent horses from interfering. It is made twice as wide and heavy on the outside as on the inside. To equalize the wear, the inner and lighter portion of the shoe is made of steel.

A CALF-FEEDING TROUGH.—"B. S.," Washington, Ind., sends a plan of an old device, but none

the less valuable, for feeding milk to calves, and for teaching them to drink milk while they are being weaned. It consists of a wooden trough (fig. 2), at the bottom of which is fastened a loop of leather

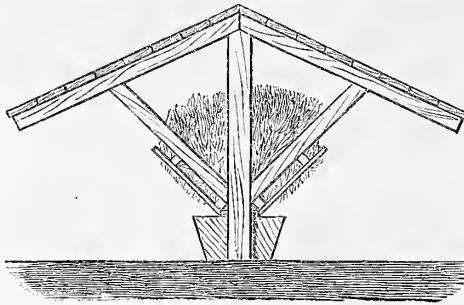


Fig. 3.—AN OPEN FEEDING SHED.

one inch wide and six inches long. The calf learns to suck at this piece of leather, and will soon leave it and drink the milk. Calves three days old will use this device. It is worth trying.

AN OPEN SHED FOR FEEDING.—A feeding trough in a yard, which can be covered to keep out snow or rain, is a desirable thing, and many devices have been contrived for the purpose, most of which are too costly. We give herewith a method of constructing a covered feeding trough, which may be made very cheaply of the rough materials to be had on every farm. A sufficient number of stout posts are set firmly in the ground, extending about 10

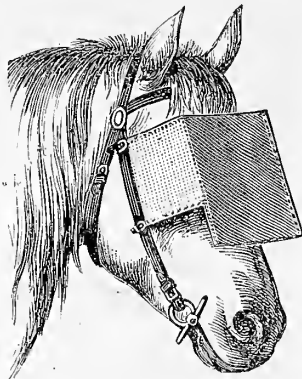


Fig. 4.—TO PROTECT THE EYES.

feet above the surface. They should be about 6 feet apart and in a straight line, and a plate fastened to their tops. A pair of rafters supported by braces, as shown in figure 3, is fitted to each post. A light roof of laths is laid, and covered with bark, straw, corn-stalks, or coarse hay. Strips are fastened from one brace to another, and laths or split poles nailed to them, about 6 inches apart, to make a feed-rack. A feed-trough for grain or roots is built upon each side. For sheep, the shed and rack may be made only 8 feet high at the peak, and the eaves 4 feet from the ground,—giving better shelter.

A SHADE FOR HORSES' EYES.—The most frequent cause of weak eyes in horses is a badly arranged stable. Foul gases irritate and inflame the tender membranes of the eye and head, and horses brought from dark stables into bright sun-light, or on to glittering snow, are dazzled and blinded. The existing weakness or irritation is intensified, and the poor animal suffers unsuspected torments. The remedy is to purify the stable and give it sufficient light, shaded by blinds, from before and behind the horse, or from both sides, avoiding a light from only the front, rear, or one side light. A shade for weak or inflamed eyes may be constructed by fastening wires to the bridle and covering it with oiled cloth in the manner represented at figure 4. Thus

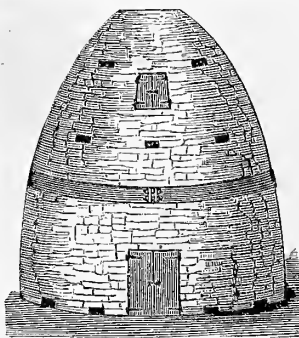


Fig. 1.—CHARCOAL KILN.

a soft, subdued light reaches the eyes, while the horse can still see the ground immediately before him. It will be a timely job to prepare such a shade now, for use when the snow comes.

Kilns for Burning Charcoal.

"Charcoal iron" is a valued product in the market, because the metal is free from sulphur and other impurities which are imparted by mineral coal and render the iron brittle and difficult to work; charcoal iron is tough, and furnishes the best material for fine manufactures. Car wheels and similar parts of heavy machinery, which are subjected to a like strain, are made from this iron.



Fig. 2.

Thus it is that charcoal burning is usually connected with iron-working where there is abundance of wood. The "pit" manufacture of charcoal was described in the *American Agriculturist*, Feb., 1860, but it is more economical to make it in permanent kilns, even for sale in the market, the cost of the kiln coal being 50 per cent cheaper than the pit coal, and the waste much less. The kilns may be conical, or in the shape of an elongated parallelogram, and are built of common hard brick. A round kiln (fig. 1) 12 feet across, would be 16 feet to the top of the dome. The wall is built up perpendicularly for about half the height, when it is drawn in gradually, requiring no supporting centers, until the opening is about 4 feet in diameter. This is closed by a cast-iron plate. The kiln is strengthened by broad iron half bands, or two tiers of them drawn up tightly by screws working in flanges, as shown at figure 2. Several bricks are left loose in

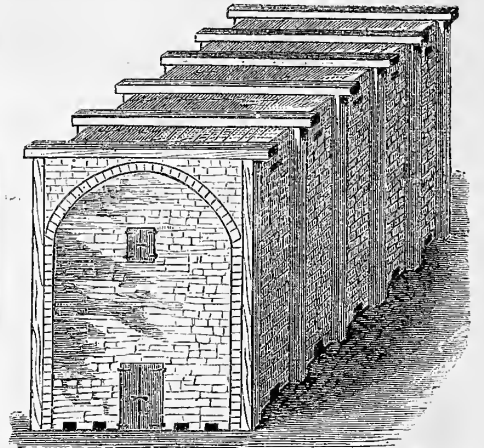


Fig. 3.—FOR BURNING CHARCOAL ON LARGE SCALE.

the lower courses, and others near the top, to be removed to make openings to admit air for draft, and for ventilation. There is a cast-iron, double door on the ground level, and one at the upper part for putting in the wood. Figure 3 shows a long kiln of greater capacity, which has plain brick walls, covered with a light arch of brick, and supported by a frame of timber posts, which are set in the ground. The doors and ventilating holes are similar to those of the conical kiln.

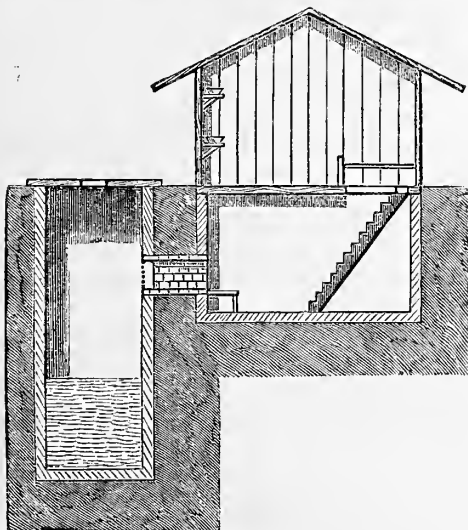
Boys on the Farm.

It is a proud day when the average boy gets on his first pair of boots and trudges to school by the side of his older sister. He does not care any longer to take her hand. The leading strings are cut. But this early ambition to be a man is entirely eclipsed, when he has taken charge of his first pair of steers, and started for the fair. Has he not raised them from their mother's milk up, broken them to the yoke and to the cart, taught them to pull and to back, to haw and to gee, and to obey his word of command? They are his workmanship, the evidence of his skill in subduing brute muscle, and making it do his bidding. He is going up to the exhibition to display the fruits of his triumph, and, as he hopes, to wear the laurels of victory. He is no longer merely a spectator upon the fair grounds, but an exhibitor of stock and an entertainer of spectators. There is unquestionably a difference of native tastes in boys. Some have a natural aptitude to one calling and some to another, but most men have their callings determined by

early circumstances; sometimes by incidents so trivial, that they have hardly a place in memory. It is not difficult generally for a father, who loves the farm, to determine the calling of his children. If he makes it a business of thrift, and provides comfortably for his family, they will respect the calling. If he is discouraged and continually shifting his work, or his home, they will not be likely to make tillers of the soil. But if he conducts the farm upon business principles—makes it a machine for coining money—and providing home comforts, they will be ready to invest in it. One can hardly begin too early with his boys to incline them to the calling that is to give them bread, and the means of their future usefulness. If the boy is to be a farmer, he must begin to have a personal interest and venture in farming while he is yet a boy. Filial affection, in a happy home, is a very strong motive to industry and fidelity, but it does not shape a boy's plans for life like an investment of his own brains and muscles in his daily work. He should have crops and animals, not only that he can "call" his own, but that are his own, to keep, to enjoy, and to sell for his own pleasure and profit. The trusts may be small at first, but they should be absolute, and let him have his own experience of success and failure in managing them. Let him manage poultry, a lamb, a calf, or a colt, and exhibit his own stock at the fairs. We notice with great satisfaction the increasing attention paid to the boys at the fall fairs. Boys did some of the best work at a recent plowing match at one of our fairs. One, a boy of fourteen, held the plow and drove his own team, and made as good a seed bed as his older competitors. These premiums for boy's work, are in the right direction, and should be carefully studied in making up the lists for next year. Make room for the boys.

A Well-Cellar.

In parts of Pennsylvania we have seen a cellar so connected with a well as to considerably lower its temperature. The arrangement might be used to advantage elsewhere. It is represented in the engraving. A cellar is dug about 3 feet from the

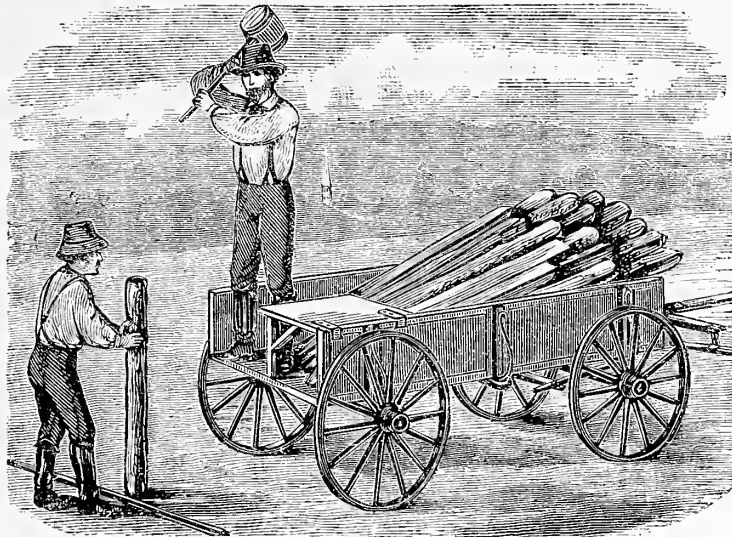


WELL AND CELLAR CONNECTED.

well, as deep as may be convenient, and an opening made between them through a brick arch, the mouth of which is covered with coarse wire netting. A slab of stone is placed near the opening, upon which butter is set to cool. A shelf, or shelves, may be put up around the cellar. It is separated from the room above by a tight floor, and connected with it by a trap-door and stairs. The cellar walls should be of stone or brick, whitewashed. The upper room serves as a store-room for clean articles,

A Method of Setting Fence Posts.

Where the soil is soft, loose and free from stone, fence posts may be set by driving, more easily and firmly than by digging holes for them. A method of driving is shown in the annexed engraving. A wagon is loaded with posts, and furnished with a movable stage, upon which the person who drives the posts may stand when first starting them. The engraving needs no verbal description except that the hook which holds the stage in place, is made of strap iron, and fastened to the floor of the stage. One man holds the posts upright, while the other



EASY METHOD OF SETTING POSTS.

drives them. When a post is driven home, the wagon is moved on to the next place, and the operation repeated. This is an easy, rapid and economical manner of setting posts for any kind of fence.

A Tennessee Barn.

A Tennessee subscriber sends the plan of a barn he is building, which we reproduce, with a few improvements, in the engraving. He writes: "I am not able to build an expensive barn, and have had to study how to obtain the most convenience for the least money. Just now labor and material are very cheap, and I think that the barn can be built for an outlay of \$250, by furnishing some timber myself, of which I have plenty. I wish to thank you for your remarks on painting out-buildings, especially as to trimmings. They suit my case."—The main barn is 30 x 40 ft., posts 20 ft. A floor for a loft is put in, 8 ft. from the first floor, over the horse stalls, granary, and tool room, and 11 ft. over the drive-way to admit threshers, etc. Double doors open on opposite sides, a small door at foot of stairs, and windows as shown. At *T* is the tool-room; *G*, the granary; *H*, the horse stalls; and at *W*, a well. The cattle shed, *D*, is 20 x 25 ft., with 16 ft. posts, and a loft for hay, into which a door opens from the head of the barn stairs. This shed may be open in the rear, for that section, or a partition may be put up behind the cattle stanchions at a slight cost. A passage-way, 2½ feet wide, runs in front of the stanchions for convenience in feeding, and familiarizing and gentling the cattle. On the front and south side of this shed is the manure-yard, and a place for the cattle to run if desired. Our correspondent locates a compost heap at *M*, which is wholly or in part under cover. A door under the stairs is convenient for removing the droppings of the horses, and a trench behind their stalls leads the liquids to the manure-heap. It is thought best to have the horses face the barn floor, that they may be more familiar with the people, and for convenience in feeding. It is quite as important to have a well planned barn as a well planned house; in both cases proper forethought will save many steps in doing the daily

work. Not only the number of animals to be provided for modify the plan of the barn, but the nature of the land must be considered in designing the building; hence a great variety of plans are desirable, that one intending to build may combine such features of each as suit his needs and surroundings.

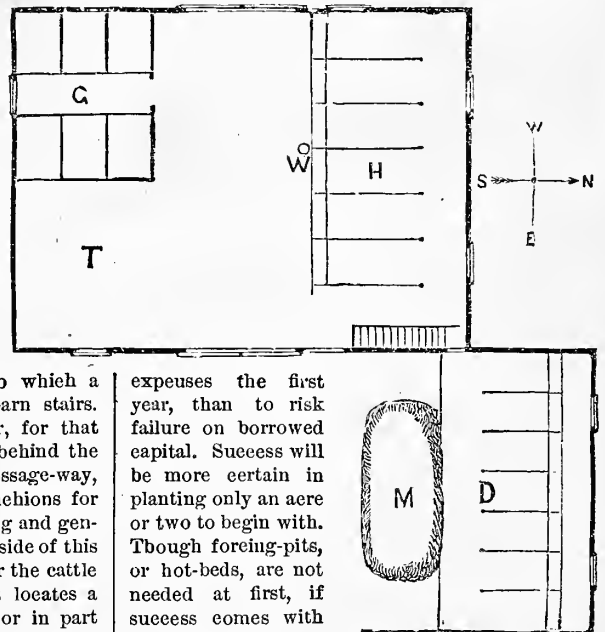
A Mechanic Turning Farmer.

We are asked to lay out a plan for a farmer in the following circumstances: He owns and lives on a small hill farm of about 40 acres, located within 25 miles of a large Eastern city, and has two boys in his family, one of whom is interested in the farm, the other not. The land is somewhat rocky, and not over fertile, but the soil is light and warm, and will produce early crops. Aside from the city market, there are several large manufacturing villages within easy reach. The owner has but little money capital. He has lived on the farm for 20 years, but has always worked at his trade of box-maker. He is tired of the confinement, and now that his son is developing a taste for farm work, his own natural love for the soil is re-awakened, and he seeks advice.

The location and the soil are well fitted for growing vegetables and small fruits for the neighboring villages. Like many other country towns, these are largely supplied with vegetables, even late in the season, from the surplus stock of the city market, which is often several days old, partially wilted, and of quite inferior quality. Now if

our correspondent has sufficient experience, energy, and determination to look after the cultivation and marketing of his crops, we know of nothing which he can undertake with a better hope of moderate success, than raising those vegetables, the value of which consists in their freshness, such as early peas, sweet corn, string beans, and others. A strawberry bed may be made the source of considerable income; and this, if successful, will naturally lead to the cultivation of various other small fruits.

A beginning can be made in this line on a small scale, without any necessity for much capital, aside from labor and careful attention. Avoid getting into debt. It is better to produce only enough to pay



PLAN OF TENNESSEE BARN.

expenses the first year, than to risk failure on borrowed capital. Success will be more certain in planting only an acre or two to begin with. Though foreing-pits, or hot-beds, are not needed at first, if success comes with experience, there is time enough to enlarge by adding these and other facilities. A few simple rules only are necessary; but these are imperative: Select ground sloping toward the south or east, and more or less sheltered either by the slopes or by trees. Drain thoroughly if needed. Pulverize the soil by repeated plowing and harrowing. Enrich at the rate of six cords or more of

good, well decomposed stable-manure per acre; if this costs over \$5 per cord, it will probably be cheaper to buy chemical fertilizers in part, unless the soil is pretty heavy and compact, in which case the stable manure will be best, to loosen its texture. Do not scatter the manure for one acre over two, as it will produce more profit on the smaller area. Cultivate thoroughly and often, and allow no weeds to grow. As soon as the vegetables are in proper condition for table use, market them; and make sure to offer for sale only the best; for these prices are easily obtained. Henderson's "Gardening for Profit" will afford much useful information.

The farm is too small for almost any other kind of farming, but is large enough and well adapted to vegetables in location and soil. One good cow to supply the family with milk, is enough; hogs may be kept at a profit for making manure, and utilizing the waste. To succeed in farming, as in anything else, one must have energy, patience, and perseverance; without these he need not expect success, and "success" in cases like the above, with limited facilities, does not mean large profits, but only a good living, independence, and happiness.

Cooking Food for Stock.

As regularly as the seasons, come the queries regarding the latest knowledge on the subject of cooking food for cattle; whether the practice will pay; why it is not more generally adopted, etc., etc. A few simple principles lie at the base of the practice, which should be understood in order to judge fairly in the matter. First—Cooking must not be confounded with mere moistening by steam. Cooking, proper, is only accomplished at a heat nearly or quite equal to that of boiling water, or of steam at that temperature. This degree of heat breaks up the food particles, especially the starchy portion, and renders a considerable amount digestible which otherwise might pass through the animal and be practically wasted. In order to secure the proper temperature in the cooking-box, there must be an engine-boiler, or steam generator of sufficient capacity to keep the box full of hot steam; and the box itself must be so constructed as to hold the steam when received. Cooking, under such circumstances, is said to render coarse food, such as ripe and badly cured hay, old corn-stalks, straw, etc., from one-fourth to one-third more digestible—i. e., a saving of \$2.50 to \$3.33 on every \$10 worth of such material.

These simple facts are so imperfectly understood that much of the so-called "steamed" food is only moistened with warm vapor, which merely softens the tissues of the fodder, without rendering it appreciably more digestible. It is claimed by those who have tried it that cooking is profitable for a herd large enough (say 50 and upward) to make the gain more than equal the cost of the labor, and interest on the investment in apparatus, etc. Mere moistening does not pay, as nothing is accomplished by it which does not take place within the animal. There are small cooking steamers, but for operations on a large scale, perhaps the most economical steam generator is the boiler of a 2 to 4 horse-power engine, which at the same time furnishes power for cutting the fodder preparatory to steaming, for threshing, wood sawing, etc. A simple calculation will decide the question for each particular case.

As stated above, hard, coarse fodder, such as over-ripe hay, straw, corn-stalks, etc., is rendered more digestible by cooking. A large part of the nutritious portion of such material is so bound up in the tissues or cells of the plant that the digestive organs of the animal have little effect upon it; but under the influence of the cooking the hard tissues are broken up, and the otherwise unavailable food is rendered available. Experience, experiment, and investigation show, however, that properly cured hay,—grass cut when green and succulent, and simply cured, not dried—fodder corn, Hungarian grass and similar fodder, roots and finely ground grain, are but little if any benefited by the process of cooking; for these are already very nearly or quite in the natural condition, and suited to the animal's capacity for digestion. A cow whose or-

ganization has become so artificial as to be unable to digest the food provided by nature, had best be sold to some man who keeps a large herd, and believes in and practices cooking; he will find that it pays in her case. No one would think of steaming grass or any green fodder, because his observation and experience tell him that nature has made the cow's stomach to digest such food; and experience tells the same story about properly cured fodder.

The obvious lesson from these facts, is, that cooking of coarse fodder pays, when there is enough of such material to be utilized, and the herd of cattle is a large one; that mere moistening such feed does not pay; and that all fodder should be put into the barns in a condition most nearly resembling its state when it is most palatable and nutritious to the animals feeding upon it while growing.

Lucern or Alfalfa in Vermont.

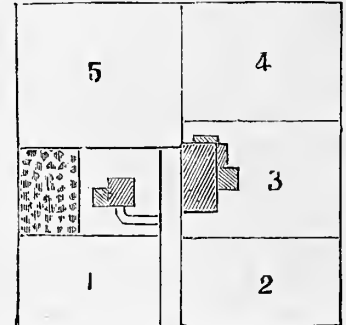
Among the unsettled questions in our agriculture is: can Lucern or Alfalfa be profitably grown in the Northern States, east of the Mississippi? There are differing opinions, and evidence on either side is welcome. Mr. Albert Chapman, of Middlebury, Vt., having been struck with the productiveness of Lucern (or as it is always called there, Alfalfa,) in California, procured seed from thence, and sowed it in 1877, in several patches on different parts of his land. It passed through last winter uninjured, and this past season he has cut from one of his patches three crops, and at the time of his writing, Oct. 28th, there was a fourth crop ready for cutting. From this crop he sent a specimen; the stalk was 23 inches high, and thickly furnished with foliage. Mr. C. estimates that each of his four crops was worth much more than any one crop of Red Clover produced from the same area of land in his county this year. Two of the other patches yielded three crops each, and on the other only one crop was cut, the succeeding growth being allowed to go to seed. Mr. C. attributes his success, in the first place, to the character of his land, which has a deep and porous subsoil, that allows the long roots of the plant to penetrate deeply. He thinks that where there is a hard, compact subsoil, the plant will not succeed. He regards as the second reason for his success, the sowing of California seed. If not all, the majority of the trials with Lucern have been with European seed. He learned in California that seed from Chili was always successful, while that from Europe, though from the same species, did not produce hardy plants. To those disposed to experiment with the plant, Mr. C. gives the caution to not sow the seed until all danger of late frosts is past, for though quite hardy when established, even a light frost in the first few weeks from the seed, is fatal to it. This is a very satisfactory account, as it points out conditions, especially that relating to the soil, which probably have not been observed in former experiments. That Lucern is a most valuable foliage plant where it can be successfully grown, seems well established.

A Simple System of Farm Accounts.

(FIRST PAPER.)

A Farmer who keeps no accounts, works in the dark. He knows not which part of his farm or labor pays, and which is a loss, and runs the risk of having the proceeds of his profitable labor offset by avoidable losses. He does not know whether this or that management is the better. With a plain and simply kept account book, he may know where he makes money and where he loses, and, in the words of a noted business man, he may "cut short his losses, and let his profits run on." The first thing in beginning to keep accounts is to make a rough map or plot of the farm, and to name or number each field, as indicated in the annexed plan, to be modified to suit any circumstances. The only necessary point is the recognition of each field, and the expenditures and receipts from it. Two books are required. The complicated systems of farm accounts in books prepared for the purpose, are bothersome, and in the end usually come

to nothing, because they are not suited to the majority of cases, and are not used. The better plan is, for each one to make his own method, and use but two books—a daily record of events and transactions, and a ledger. The daily record is a most useful book, and if kept with regularity, in a few years becomes a history of the farm, if not of the family, and of the seasons and weather. A small book, 8 inches by 5, with 300 ruled pages, but without money columns, will serve for many years. These books are sold very cheaply now, but it will pay to have one of good paper. One can be made by



PLAN OF A FARM.

stitching together note paper or folded foolscap. One of the greatest benefits of keeping accounts is, that every thing becomes reduced to a system, and the most careless or inexperienced farmer soon becomes methodical and observant (if he persevere). In the record is noted the events of each day—more particularly the business transactions. The following lines will serve as a sample of how these may be entered. It will be better to state more particulars, to note the weather, etc., etc., but such simple records are always of very great value:

- 1873.
- Oct. 1. Finished building spring house; cost \$28.84.
 " 2. Hired P. G., at \$22.00 per month, to clear swamps.
 " 4. Finished sowing rye in No. 5. *32 bush. seed, \$19.20.
 " 5. Paid D. P. \$4.50, one week's wages. 7 doz. eggs, sold to B. Bros., at 13c.....91c.
 " 7. Received from W. A. C., proceeds of sweet corn, from No. 5.....\$181.16
 " 9. Paid D. D. \$600 for 12 cows. Finished cutting corn in No. 5, 8 days' labor. Began plowing No. 3.
 " 10. Plowing No. 3. Paid for 2 tons of bran.....\$32
 " 11. Shipped 60 bushels potatoes to W. A. C.
 " 12. Cash for milk sold this week, \$32.50.—Began pulling mangels for cows. 10 bushels used.
 " 14. Finished cistern; cost \$30.25. 20 bushels mangels.
 " 15. Finished plowing No. 3. Sowed 16 bushels seed.*
 " 16. Finished harrowing No. 3. Husking corn, ½ day.
 " 17. 9 bushels wheat to mill. 5 doz. eggs to B. Bros.

In this manner each day's transactions are noted, so that at the end of the week or month, the entries may be transferred to the ledger. It is unnecessary to do more than give a clear clue to what has been done, so that each charge or credit may be made out distinctly, and as these should be entered in the ledger each week, something may be trusted to memory. It is also unnecessary to be over particular in small matters, or to be so precise that it may be troublesome to enter some items. The chief thing is to know what is done so nearly that the final result can be reached as closely as may be. Many persons who begin, soon get hopelessly mixed up by trying to be too particular at the start. After a beginning is once made, and facility acquired, then one may be as exact as he pleases. But there are many things in farm accounts where one must "give and take," and such small irregularities are unavoidable and will about balance each other in the general result. For example, if one goes to mill with a grist, the time occupied need not be charged to the flour or to the house expenses with the flour; nor need the skim milk fed to pigs or calves be charged in accounts unless it is desired to know the exact cost of each item of work or production. But the grain used for feeding cows, fattening cattle, sheep, pigs, and poultry, should be measured out and charged to each, as it is very important to know what profit or loss is made from each kind of stock; and for each crop raised, the cost of labor expended upon it, and the value of the seed, and manures, should be noted, and the crop measured and its value calculated.

*The quantity of seed is large, being 4 bushels per acre, as it was sown thickly for cutting for cows in the spring.

Plan of a Wood Shed.

Where fire wood is used, a shed for its storage and preparation is a necessary addition to the homestead. It may be of any desired size, but 24 feet long and 12 to 16 feet wide, are good average dimensions.

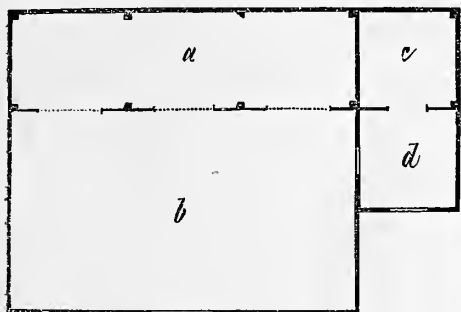


PLAN OF A WOOD SHED.

A convenient arrangement is shown in the engraving: at *a*, are the kitchen steps, at *b*, is a saw table, with a circular saw driven by the horse power *c*. Outside of the door, *d*, is the wood pile from which the sticks are brought through the doorway to the person sawing, who stands at *x*. As the wood is sawn, it is thrown to a heap close by, to be afterwards split and stored away in compact tiers for use.

Sheep-Yard and Ram-Pen.

Where a valuable ram, or a large flock of ewes is kept, it is advisable to have the ram confined during



SHEEP-YARD AND RAM-PEN.

the day-time, and admit him to the ewes only at night; or to turn into his yard, those ewes that are ready. A wether kept with the ewes will soon single out those which are in season, and direct the shepherd's attention to them. Under this method a full grown ram will be sufficient for 50 to 70 ewes, if he is kept in a vigorous condition by good feeding; the lambing season may be spread over one or two months, and the time of each ewe be accurately known. A plan of a yard and pens for this system is illustrated herewith. The ewe shed is at *a*, their yard at *b*; the ram's pen at *c*, and his yard at *d*. Dotted lines indicate gates.

Stock-Feeding for Profit.

"What Shall Eastern Farmers Do to Compete with the West?"

A considerable portion of the beef sold in the great markets of England is produced from animals brought from Scotland, and fattened in English pastures and feeding stalls. Scotch farmers breed animals well adapted for fattening, and at two to three years of age drive them southward and sell them to English farmers who "finish" them for market. Many of these are spayed heifers which make as good beef as steers—by some considered better. These animals are fattened on pasture feed, straw, turnips, and oil-cake, which makes a complete and profitable beef-producing food. The only thing purchased is the oil-cake (or Indian corn) which, as shown last month, leaves much of its value in the manure-heap. The result is two valuable money products: grain and beef, and a constantly increasing fertility of the soil, which is augmented by using purchased superphosphates on the turnips. A similar practice has prevailed more or less in our Eastern States. Young cattle, produced at a low price further West, are purchased and fed a few months, to finish them off for market, and with very satisfactory results. A few cases are re-

ported of parties fattening a large number in this way for the European dead meat trade. There is good reason to suppose that this practice may be profitably extended, and perhaps be a partial solution of the problem: "What can Eastern farmers do in competition with the West?" as it really makes each section help the other. At present, the animals which are fitted for beef on the Western ranches and shipped East, to be slaughtered on arrival, would make far better beef if fed for a month or two within 100 miles of the Eastern markets. The Eastern farmer has better facilities for this part of the work than his Western co-worker, and, being nearer, can get the product into market in better condition. No animal is really fit for beef for some weeks after a long railroad journey. Under this mutual arrangement, the Western farmer should (to develop the business) breed beef animals by the use of Shorthorn or Hereford bulls, and perhaps will in time introduce the Aberdeen or other Scotch polled cattle; but he is relieved of the work of the expensive feeding for which the ranch has but poor facilities. The Eastern farmer will produce a large amount of the best manure for the enrichment of grain and turnip land; he can purchase Indian corn and oil-cake at a low price, and will have wheat, barley, and beef to sell.

The most important point to be considered in this business is to attempt to fatten only that class of animals whose breeding and form are adapted to rapid laying on of flesh. We know of a farmer who believed in this idea, but he purchased a lot of "scalawag" cows and scrawny "stags." They were well fed and gained somewhat during the winter, but so little, that when sold they brought no more than their first cost; and though the food was not wasted, its valuable parts being mostly in the manure heap, yet the time and labor expended were all thrown away. Another acquaintance, within 100 miles of the above, purchased 60 grade Shorthorns at a fair price, and made a good profit from the investment. Fattening beef animals pays; but trying to fatten inferior animals is a waste of energy, time, and labor. The animals should be selected with special reference to the rapidity with which they will fatten; to the quality of the beef, fineness of bone, compactness of body, and small amount of offal which the carcass will yield.

Burning Green Wood greatly Wasteful.

Water in passing into vapor absorbs and hides nearly 1,000 degrees of heat. A cord of green wood produces just as much heat as a cord of the same wood dry. In burning the dry wood we get nearly all the heat, but in burning the same wood green, from one-half to three-fourths of the heat produced goes off latent and useless in the evaporating sap or water. Chemistry shows this, and why, very plainly. Therefore get the winter's wood for fuel or kindlings, and let it be seasoning, as soon as possible, and put it under cover in time to be dry when used. It will of course season or dry much faster when split fine.... A solid foot of green elm wood weighs 60 to 65 lbs., of which 30 to 35 lbs. is sap or water. As ordinarily piled up, if we allow half of a cord to be lost in the spaces between the sticks, we still have a weight of about two tons to the cord, of which fully one ton is water or sap. Such wood affords very little useful heat; it goes off in the ton of sap. The great saving of hauling it home dry is evident—as we get the same amount of real fuel for half the team work. Beech wood loses one-eighth to one-fifth its weight in drying; oak, one-quarter to two-fifths.

Excellent Protection against Rusting.

For farm implements of all kinds, having metal surfaces exposed, for knives and forks, and other household apparatus, indeed for all metals likely to be injured by oxidation or "rusting," we know of no simpler, more effective application than that furnished to the *American Agriculturist* by the late Prof. Olmsted, author of Olmsted's Natural Philosophy, etc. He used it on air-pumps, telescopes,

and various other apparatus.—Take any quantity of good lard, and to every half pound or so, add of common resin ("rosin") an amount about equal to half the size of an egg or less—a little more or less is of no consequence. Melt them slowly together, stirring as they cool. Apply this with a cloth or otherwise, just enough to give a thin coating to the metal surface to be protected. It can be wiped off nearly clean from surfaces where it will be undesirable, as in the case of knives and forks, etc. The resin prevents rancidity, and the mixture excludes the ready access of air and moisture. A fresh application may be needed when the coating is washed off by the friction of beating storms or otherwise. This single recipe will be worth many dollars to any one in the long run. There was talk of patenting it, at one time, but Prof. Olmsted gave it to us to be published for the general public good.

Some Facts About Lime.

Several correspondents ask for information concerning the use of lime on land, and all of them contain evidence of several commonly accepted but false theories. First, lime is not plant-food; or rather it is so common in most soils, and incidentally comprises so large a portion of many fertilizers, that its application as plant-food is unnecessary. We have not seen a soil analysis from which this constituent was missing, and there is nearly always considerable of it present in available form; all true superphosphates are composed of one-fourth part or more of lime, and it is prominent in Peruvian and fish guano, in nearly or quite all manufactured fertilizers, as well as in barn-yard manure.

Lime, however, has an important effect aside from its action as plant-food. Freshly burned lime (known as "caustic lime" and "quicklime") has a strong affinity for carbonic acid, so that when it and organic matter (which always contains a large proportion of carbonic acid) are mixed together, the lime and carbonic acid unite, promoting the decomposition of the organic matter. Newly "slaked lime"—which is lime united with water—has an effect similar to quicklime, though slower, and hence is better for farm use. Fresh, undecomposed organic substances, especially dung, contain the most valuable ingredient of plant-food, nitrogen, in its simple form; but it is very soon changed into ammonia, which in turn unites at once with carbonic acid. Then when lime is brought in contact with the mass, it at once combines with the carbonic acid, and the valuable ammonia escapes and is lost. When, however, the lime is applied before the ammonia is formed, the nitrogen is oxidized to nitric acid, which unites with the lime to produce nitrate of lime, and the nitrogen is saved. Therefore, lime may be used in stables and house privies, or in composting carcasses of dead animals, to advantage; but if mixed with manure a day or two old, the result is a loss of valuable material. The above also shows why, when lime is put into a compost, it has such beneficial action in hastening decomposition, and why it is necessary to use plenty of fresh earth to absorb the escaping ammonia.

Free acids, and those in easily decomposable substances, are also readily taken up by lime, and many injurious compounds, as of iron in wet lands, are rendered harmless. In some soils insoluble silicates, of potash, etc., accumulate; but the action of lime will break up these combinations and set the potash free for use as plant-food.

The above statements show that the main action of lime in the soil is in making available plant-food what was before unavailable. Therefore, while it may increase the crop-yield of poor land, it will tend to bring about its early exhaustion, unless plant-food is added. In heavy clay soils, the above mentioned chemical reactions of lime, destroys their tenacity and makes them friable and porous. Soils containing a large proportion of organic matter are benefited by its application. Wet lands are less benefited by lime than the same when drained, on account of the water. Light soils are improved by it when accompanied by a liberal application of muck or other organic matter; clays should also have the same treatment. As the best effects of

lime are not apparent until the second year, it is best to apply it early in the fall; then, if the land is not rich enough, manure or other fertilizer put on the following spring will help produce a good crop, other conditions being equal. The amount used is from 10 to 50 bushels per acre, according to circumstances, the condition of the soil, etc.

Chicken Pox.

Many of the descriptions of diseases of poultry, so nearly correspond with the symptoms of what is given as "Chicken Pox" in Feleh's book on "Breeding and Management of Poultry," that we make an abstract of the chapter:

Symptoms.—A raised and warty eruption of the comb, face, and wattles, yellowish white in color. When the scabs are removed, these warty substances resemble a bunch of tiny spiles set into the flesh, and the wounds produced bleed profusely.

Treatment.—Remove the scabs and bathe in hot water and Carbolic Acid. When the bleeding ceases apply Citrine Ointment, which will dry the warts to hard black scabs; let these remain for 60 to 70 hours, when by removing them, they will take away the little white "roots" which are from one-sixteenth to one-fourth of an inch in length.

Each morning for four days, give a pill made as follows: Table-spoonful common Flour; one of Flowers of Sulphur; tea-spoonful of Cayenne Pepper; 35 to 28 drops "Fowler's Solution," (Arsenite of Potash,) and milk enough to mould the compound into 20 pills. Dissolve four grains of Quinine in two-thirds of a pint of milk, giving one-half in the morning, and the balance at evening. Feed, while treating, on boiled onions and rice mixed with oatmeal. If the disease attacks the eye and so prevents feeding, make the food into pellets, which, if dipped in milk, and the bird held, will slip down the throat readily. If the sulphur acts too powerfully upon the bowels, scald the milk given, which will cause it to act in the proper direction. Feed vegetables, sulphur, and iron, to the flock to check the spread of the disease, and cleanse the house in which it appears, as thoroughly as the "Board of Health" would a house that had been visited by small pox.

Hornless Cattle for American Breeding and Foreign Markets.

In several former numbers we have written of the Polled Cattle, which are now attracting considerable attention abroad. Mr. J. H. Wallace has been among them of late, and his investigations lead him to the belief that their general introduction among beef producers in this country, would be a desirable improvement. Horns were put upon cattle for self-defence, but in their domesticated state there is no good use for such weapons—indeed they are a positive detriment. In the freedom of prairie and farm life, horns occupy a neutral position, and are of small account, except as ornaments and handles to lead gentle cows by, on the one hand; and as boy and dog

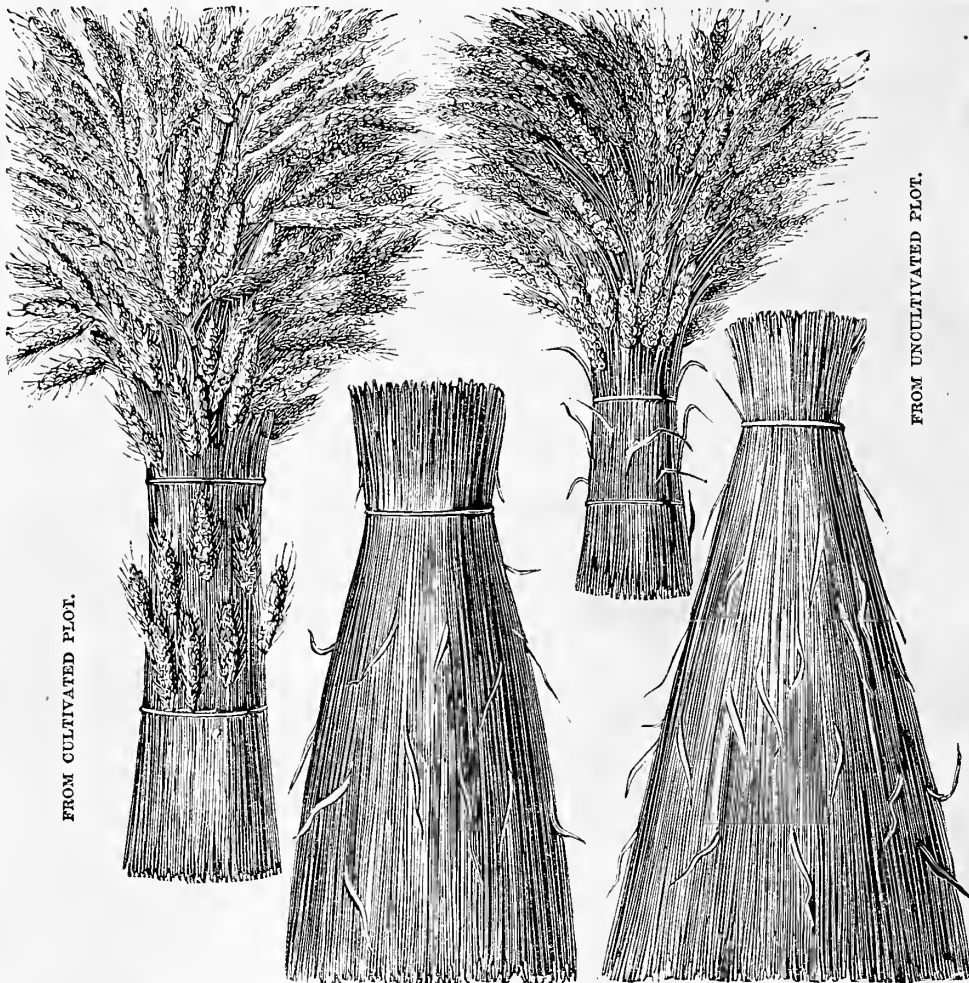
tossers, women frighteners, bar and gate openers, skin tearers and horse embowellers, on the other. As soon as these horns, however, attached to half as many valuable beef animals, are collected in a crowded cattle ear, they at once become property destroyers, and fit subjects for the action of the Prevention of Cruelty to Animals Society. In the long journey from their Western pastures to Eastern markets, the cattle are sorely worried and often purposely, or unintentionally, badly gored by their neighbor's horns. Doubtless some of the falling off in condition during their travels is due to the rough handling of the numerous sharp and powerful weapons by ignorant heads; especially must this be the case with the half-tamed Texan

even excelling the Shorthorns at many shows and in market, it must be admitted that these cattle deserve the attention of our breeders and beef producers. The result of the animals getting to market in a better condition after a long railroad or ocean journey, would be larger prices for the better beef, and more of it to sell—usually a cogent argument with men who are looking after the profits.

Experiments in "Cultivating" Wheat.

It is as reasonable to believe that grain crops should be benefited by cultivation as that potatoes, corn, cabbages, and other crops should be. Hoeing

wheat is not an uncommon practice in Europe, and farmers in this country have begun it with marked success. We are favored by Mr. Travis, of Michigan, with samples of wheat grown with and without cultivation, on adjoining plots, and cut from equal spaces of ground. We give an accurate engraving from drawings of the bunches themselves, which are cut in two to save space. Reports are also at hand of a committee of neighboring farmers, under whose supervision the experiments were made. 68 lbs. of seed per acre were sown in drills 16 inches apart, and 90 lbs. per acre in drills 8 inches apart, Sept. 8, 1877, on sod ground plowed Sept. 1st. That in 16-inch drills was cultivated with the Travis wheat-hoe, once in the fall, and twice the next spring; the other was not cultivated. The wheat was examined during growth, by the committee, and harvested in their presence. According to their report, the wheat in the 16-inch drills did not lodge or crinkle down, while that in the 8-in. drills did so badly, (probably to some extent the effect of



SHOWING THE DIFFERENCE BETWEEN CULTIVATED WHEAT AND UNCULTIVATED.

cattle, whose wildness renders their long horns unusually troublesome when crowded into rail-cars.

On shipboard, the horns are a source of trouble, even more apparent than it is in railroad travel. Here the cattle are tied up in twos, in boxes just large enough for them to stand, but without room to lie down. In the animal's efforts to rest, the horns and halters frequently become entangled, resulting in injury and worry to each of the box-fellows; and when one does lie down his frantic struggles to rise are sure to cause hooking and ripping, as his neighbor has no place to stand except partially over him. Every one knows that fretting and discomfort, and slight injuries even, invariably result in a falling off in flesh, and an unhealthy state of the body, and the horns of the cattle are very frequently an inciting cause of this condition.

To remedy this defect we would not do as the Irish farmers did when it was first found that hornless cattle brought a higher price in the English markets: they stripped back the skin over the heads of the young calves, and removed the just starting horns. Perhaps the remark of a farmer, that "a horn was a mighty convenient handle to lead a cow by," and that "a mooley cow would slip through a halter mighty slick," are serious objections to some, but why any more so than as applied to a horse? When to the quality of having no horns, is added that of being excellent beef animals, as the Angus or Aberdeen Polled Cattle are,

the Hessian fly). The average yield was 69½ per cent greater in the 16-inch drills than in the 8-inch. Where in some of the 16-inch drills the quantity of seed was only 3 pecks per acre, the stand was as thick as where 64 lbs. per acre were sown. The weights of 3 samples of each sowing, cut from equal spaces of ground, and with equal conditions in every respect except cultivation, quantity of seed and width of drill, are given as follows:

Cut from equal spaces.	16 inch drills, cultivated.	8 inch drills, not cultivated.
No. 1 sample weighed.....	3 lb. 4 oz.	2 lb. 0 oz.
No. 2	3 lb. 2 oz.	1 lb. 9 oz.
No. 3	2 lb. 10 oz.	1 lb. 12 oz.
Total weight.....	9 lb. 0 oz.	5 lb. 5 oz.

The number of heads in the samples were:

Cut from equal spaces.	16 inch drills, cultivated.	8 inch drills, not cultivated.
No. 1 sample had.....	564 heads.	320 heads.
No. 2	526 heads.	381 heads.
No. 3	453 heads.	338 heads.
Total.....	1,541 heads.	1,039 heads.

The larger growth of straw in the samples from the 16-inch drills was also conspicuous. These results are not especially wonderful when we consider the already well known beneficial influence of cultivation upon grain crops. This long-needed improvement in our agriculture has already made an impression upon farmers in widely separated parts of the country, and has resulted so favorably as to indicate that the cultivation of wheat will ere long become a very general and profitable practice.

The Scarlet Monkey-Flower.

(*Mimulus cardinalis*.)

"Monkey-flower" is neither an elegant name, nor is it descriptive for our plant. The genus was named *Mimulus* by Linnæus, because the corolla in some species has a remote resemblance to a grinning face, and while some authors suppose that he took the name from the Greek for ape, others think it was from the Latin for mime, or mimic; at all events the name has been translated into Monkey-flower too long for us to try to alter it. In the At-

lantic States we have two native species of *Mimulus*, but their pale-purplish flowers are not showy; in Michigan and westward there is a yellow-flowered one; and still further west, the number of species increases, until on the Pacific coast they become so numerous as to number about 25. Probably the best known *Mimulus* is *M. moschatus*, the "Musk-plant," so often abbreviated to "Musk," that many suppose the drug with all-powerful odor, some call it perfume, to be from this vegetable, instead of being unpleasantly animal. The Scarlet Monkey-flower, a native of Oregon and California, has been in cultivation for nearly half a century, but, like many other good things, has been pushed aside by newer comers. We saw it in its wild state many years ago, but never happened to cultivate it until last year. The plant was unintentionally left out last fall, and, as the succeeding winter was unusually mild, it came up last spring with great vigor, and has all summer given a continuous bloom, which has not ceased up to the time we write—Oct. 25th. It can not be relied upon as quite hardy, and it is safer to make new plants from cuttings to keep over the winter in the greenhouse. In its native localities the plant is two to four feet high, but in cultivation is rarely over a foot, and, as

it branches freely, is about as broad as tall. The engraving of the upper end of a branch of the natural size, shows its general appearance. There is, to us, something very pleasing in the aspect of this plant; the leaves, being clothed with somewhat sticky, minute hairs, have a pale and tender green, against which the flowers show in striking contrast; the color of the flowers is a most peculiar scarlet; it is bright and lively, without being intense. In Europe, where it is more cultivated than with us, several varieties have been obtained with flowers ranging from orange to dark-reddish purple. The stigma of this flower (the terminal por-



SCARLET MONKEY-FLOWER.—(*Mimulus cardinalis*.)



GRACEFUL SUNFLOWER.—(*Helianthus orgyalis*.)

tion of the pistil, which receives the pollen) is very sensitive. Instead of a blunt end or knob, as in most flowers, the stigma consists of two egg-shaped plates, as seen in the engraving; these spread apart when the flower is in "full blow," but whenever pollen falls upon the inner surface of these plates, they suddenly close; they are so irritable that the same movement takes place when they are touched by a small splinter, or any other hard substance.

The Graceful Sunflower.

(*Helianthus orgyalis*.)

Those whose knowledge of Sunflowers is confined to the common annual species—the Sunflower—can hardly conceive of a graceful one. Some plants appear to be associated with certain surroundings and to belong to shiftless, "ne'er do weel" people. The dwelling of such is often surrounded by a dilapidated fence, within which Sunflowers and "Love-lies-bleeding" suggest that even in a house where old hats and rags supply the place of window-panes, there is some one who has a love for flowers, however coarse they may be. But all Sunflowers are not coarse, and while we admit that

"The Graceful Sunflower"—which is not at all inappropriate. We had known this species for several years, but had not especially noticed its beauty until we saw the past autumn, at the Cambridge Botanic Garden, a fine clump of it, 10 or 12 feet high, where it was contrasted with a large number of other species of Sunflower, and easily outshone them all. Later we saw it in the herbaceous perennial grounds of Woolson & Co., Passaic, N. J., where, with the coarser, but even more abundant flowering *Helianthus Maximilliani*, it made a fine show. The plant is perennial; a well established root will throw up a cluster of a dozen or more stems which reach far above a "man's height," being from 8 to 12 feet in good soil; they bear an abundance of leaves quite unlike those of the ordinary Sunflower, being sessile (without a leaf-stalk), about 6 inches long, and not over an inch wide. The flowers (properly heads of flowers) are about 3 inches across, and upon long stalks; the showy portion, or rays, being of a lively, cheerful yellow. For clumps upon a large lawn this is a most effective plant, and from its great height it may be used for the center of ornamental groups of bold plants, as it is without the coarseness that in herbaceous plants usually accompanies size, and it

lantic States we have two native species of *Mimulus*, but their pale-purplish flowers are not showy; in Michigan and westward there is a yellow-flowered one; and still further west, the number of species increases, until on the Pacific coast they become so numerous as to number about 25. Probably the best known *Mimulus* is *M. moschatus*, the "Musk-plant," so often abbreviated to "Musk," that many suppose the drug with all-powerful odor, some call it perfume, to be from this vegetable, instead of being unpleasantly animal. The Scarlet Monkey-flower, a native of Oregon and California, has been in cultivation for nearly half a century, but, like many other good things, has been pushed aside by newer comers. We saw it in its wild state many years ago, but never happened to cultivate it until last year. The plant was unintentionally left out last fall, and, as the succeeding winter was unusually mild, it came up last spring with great vigor, and has all summer given a continuous bloom, which has not ceased up to the time we write—Oct. 25th. It can not be relied upon as quite hardy, and it is safer to make new plants from cuttings to keep over the winter in the greenhouse. In its native localities the plant is two to four feet high, but in cultivation is rarely over a foot, and, as

only needs to be known to be valued in proper situations. That we may not be alone in our commendation of this Sunflower, we add that Vilmoren (*Fleurs de Plaine Terre*) says: "This plant, from its majestic and picturesque habit, is particularly suited to ornamentation in landscape gardening; employed with discretion, it will produce excellent effects, especially when used in masses on lawns, or planted near bodies of water." Mr. Robinson says "a tall, graceful, willow-like herb. * * * The tips of the shoots for a length of 15 inches or so, cut off and placed in water in-doors, are as ornamental as the most graceful or delicate young Palm or *Dracæna*." We infer that this applies to the use of the graceful foliage before the flowers open. The plant is a native of Kansas and Arkansas, and blooms in August and later, and is quite hardy.

Fixtures for Window Plants.

Window boxes, those intended to hold the soil in which the plants are to grow, have been described in earlier numbers, but those who keep their plants in pots, will find a box exceedingly useful. The pots being placed in this and surrounded by sand, or what we think preferable, sphagnum or peat moss. The use of a box will prevent much litter, which is to some very neat house-keepers a sufficient objection to keeping any house plants. If the plants must be moved away from the window for safety in an unusually cold night, or for other reason, the box allows this to be done with very little trouble. A still greater



Fig. 1.

advantage is, that it checks undue evaporation from the surface of the pots, and makes watering less frequently necessary. If the window has a deep sill, the box may sit upon that; otherwise it should be on legs with casters. The box may be of pine, securely put together, or of any ornamental wood.

In describing, some time ago, a window box for holding the soil, we suggested that oil-cloth carpeting of some neat pattern, made a covering that at a little distance could not be told from expensive tiles. Whatever the box may be, it should be lined with zinc. The pots will be of various heights, and in arranging them in the box, the tops should all be brought up to the same level, by standing them on blocks or small inverted empty pots, or whatever will serve the purpose. The moss is to be first thoroughly dampened and then squeezed in the hands; it is then to be packed in by degrees

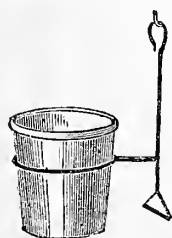
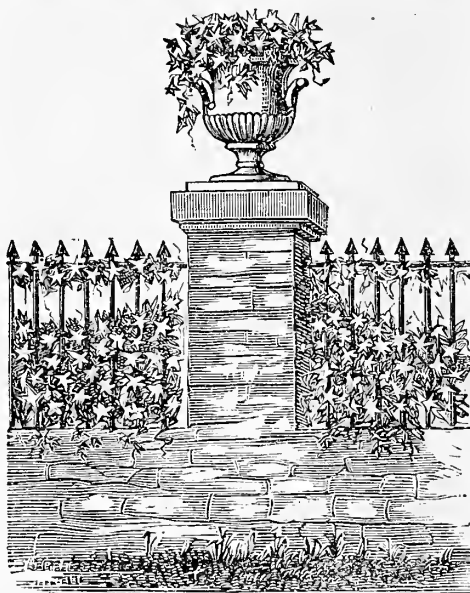


Fig. 1.

around the pots, using a stick to press it down where the spaces are too narrow for the hands. The pots should be far enough below the edge of the box, to allow of a thin layer over them and the earth they contain. Sand may be used in a similar manner, but it has no advantages over moss, while it is much heavier. In that most excellent work on window gardening, "Winter Greenhouses at Home," the author, the Rev. Doct. E. A. Johnson, shows how he produced his fine effects with the most simple materials, and among other contrivances, are home-made brackets for supporting pots. Where the window has deep jambs the space may be utilized by suspending pots at the sides, and if these contain drooping or trailing plants, the effect is very pleasing. Figure 1 shows how a bracket is made from stout wire, brass in this case being the best. It will be seen that it is of one piece; the horizontal arm that holds the ring is double, and this portion should be neatly and closely wound with fine copper wire. The triangular portion at the bottom is to keep the whole steady by resting against the wall; this part may be circular or any other form that may be desired. Figure 2 shows the bracket suspended and in use.

A French Garden Fence.

Our correspondent "H." writes from Paris: It is the custom in France, in both city and country, either to build grand houses in the form of a hollow square, with a court in the center, or to surround them with high walls like a fort. Every Frenchman's house is in fact his "castle." Visitors thus miss seeing the prettiest parts of Paris. Once in a while a gate is opened, and one takes in a passing glance of a small earthly paradise,—flowers and fountains, shady walks, and white statues, a palace of wrought stone; the heavy gates swing together once more, and leave only a dingy gloomy wall, the shadow of which falls half way across the street. Once in a while an exception is found, and I inclose sketch of an open iron fence, mounted on a foundation of stone and mortar, through which I recently looked with great pleasure, upon the flower garden and country home of a gentleman in Chaumes. The wall and fence are shown from the street side. The foliage indicated is ivy, neatly trained and trimmed; the open spaces are at a con-



A GARDEN FENCE IN CHAUMES, FRANCE.

venient height for passers-by to look in. On the inside, the stone work is entirely covered with ivy.

Forest Tree Planting—The Seeds.

Much that is very useful has been written about Forest Tree Planting, but the articles for the most part do not go into those practical details that are necessary, especially for the inexperienced, to secure success. While some forest trees may be raised as readily as a hill of corn, this is by no means the case with all. Certain trees that when three or five years old are among the hardiest, are, during their first year, quite as "miffy" as some greenhouse plants, and their culture in this early state actually requires more care than that of a Rose or Geranium. The care required is not of a kind that any intelligent person can not give, but whoever would raise trees from seed, must know that it is required, and how to supply it. Leaving the treatment of young plants until later, when we come to seed sowing, we at the present consider an earlier step, and one upon which success depends as much as on any subsequent one—the proper preservation of the seeds during winter, or from the time of gathering to that of sowing. Tree seeds present a great variety in size and other characteristics; between the soft, flattened scale of the Catalpa seed, up to the large, hard-shelled Black Walnut, there is a wide difference, and while both are seeds, the treatment proper for one would result in the loss of the other. While a few forest-tree seeds may be kept without any more care than that given to ordinary garden seeds, the majority require special treatment to preserve their vitality. It does not seem to be generally known that some seeds ripen in early summer and must be sown at once; these come up in a few

days, the young trees grow rapidly and ripen their wood in preparation for winter all in a few months. The principal trees, the seeds of which behave in this manner, are: the Elms, and the Silver or White, and the Red Maples—other Maples ripening seeds in October. Of course, seeds of these trees are not usually kept by seedsmen, though some of them contract to deliver them as soon as ready. They should be sown as soon after they fall as possible. The principal seeds kept without any special care, beyond storing them in a cool, dry place, are: Ailanthus, Catalpa, Honey Locust, Locust, and Osage Orange; when not for sale, both kinds of Locust are better if left in the pods until wanted for sowing. Many tree seeds if allowed to become quite dry, will either not germinate at all, or will remain in the ground dormant the first year and not come up until the second spring. To prevent drying, many seeds are kept in sand, and when the nature of a seed in this respect is not known, it is safer to preserve it in this manner. Sand for this purpose should not be wet, but damp; the condition in which it is dug from a bank is the proper degree of moisture. The bulk of sand should be at least equal to that of the seeds; and where, as in the case of Magnolia seeds, there is a pulpy coat, more may be used. The seeds, mixed with sand, should be stored in a cool place; being moist, a moderate warmth will cause germination, which is to be avoided; as a general thing, freezing will do no harm. The forays of rats and mice are to be guarded against. The common seeds kept in sand, are: the Sugar and other Maples, except those above named, Box Elder, Ash, Linden, Oaks, Chestnuts, Wild Cherry, Beech, Birches, Hickories, Mountain Ash, Tulip Tree, Walnut, etc. Large quantities of Hickories, Black Walnuts, and Butternuts are preserved in heaps in the open ground, the piles being carefully covered with sods, or in the absence of these, straw, and over these, three or four inches of well packed earth, the heaps being of such a shape and so finished as to shed rain.

Seeds of Conifers, usually called Evergreens, though the Larch and Southern Cypress belong here and are deciduous, present some variety. The cones with thin scales, such as White Pine, the Firs, Larches, etc., usually open readily, or will do so when dried in the sun, or by a gentle heat. When the seeds drop spontaneously, they are to be kept like ordinary seeds; if they will remain in the cones, it is better to allow them to do so until wanted for sowing. The cones of some pines require long drying before they will open; Europeans obtain the seeds from the Cluster, Stone, and other pines that open with difficulty, by hurrying the cones in a sandy place for several weeks; the scales then open readily, and the seed, swollen by the commencement of germination, are sown at once. Red Cedar seeds do not germinate until the second year; these are mixed with an equal bulk of sand, put into a box, and buried in a place where they will not become dry, and sown the second spring.

The Cyclamen as a Window Plant.

Among the less cultivated plants in window gardening is the Cyclamen. When we say, the Cyclamen, we refer to the varieties of *Cyclamen Persicum*, of which there are many. It is especially useful in window culture, as the leaves are of themselves beautiful, and the plant would be worth growing for these if it did not flower. The so-called bulb of Cyclamen is really a much depressed stem, flatter than the flattest of flat-turnips, producing roots from the lower surface, and leaves and flowers from the upper. There are three ways of getting a start with Cyclamens; to raise them from seed, to buy imported bulbs, and to get plants from the florists who have grown them from seed. It is out of the season, to talk now about starting the plants from seed, but they may be had from the other two sources. Imported bulbs are shrivelled and flabby, but soon recover if pressed well down upon the surface of a potful of good soil. They do not need to be planted, *i. e.*, buried at all—merely pressed down firmly; be sure to put them in right side up; the top shows small buds, or scars of former leaves. They will soon absorb moisture, and

become plump, roots will strike from the lower surface, and leaves, followed by buds, from the upper surface. Florists who make a specialty of the Cyclamen are usually careful about their seeds, and one is more likely to get plants that have large flowers from them, than to buy imported bulbs. The plants need no special care beyond that required by other window plants; they will continue for a long time to throw up their quaint, knowing-looking flowers, and when these are done with, the foliage will make it worthy of the place it occupies.

The White Grub and Its Ways.

Last August, in Notes for the "Orchard and Garden," p. 325, a brief account was given of the destruction of several acres of lawn. After that was written we visited the gentleman referred to, and examined that portion of the lawn that had not been re-seeded, and saw the men at work removing the old turf and picking up grubs by the bush! Since then we have received many letters complaining of the work of the grub—some having lost their strawberry plants, others their flowering plants, others their grass—indeed, it makes little difference what the plant may be, for we have known them to cut off the roots of young apple-trees as large as one's finger. These letters, as a whole, show that the writers, if they know what the grub is, have very imperfect ideas of its ways—or modes of life. The first step towards a successful combat is to know the strength and the tactics of the enemy, and though we gave a quite full account of the insect several years ago, our correspondence shows that the subject needs to be presented anew. We find that otherwise intelligent persons do not understand the changes which insects undergo. Not so very long ago a gentleman brought us some beetles—perfect insects—and insisted that they changed into something else, and no argument or assertion would convince him to the contrary. In brief, the changes of insects are always in one direction; we have first the *egg*, then the *larva* (the grub, maggot, caterpillar, or "worm" state); in this condition it makes its growth, which requires all the way from a few weeks to a few years. When full-grown, the larva forms a *pupa* or chrysalis, usually becoming dormant, and in due time it bursts its covering, and comes out a *perfect insect*—as a beetle, butterfly, fly, or whatever its kind. The creature has then completed its career—it does not "turn into" anything, but it lays eggs, and thus the series begins anew.



Fig. 1.—BUG.

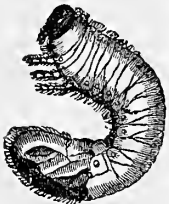


Fig. 2.—GRUB.

This being the routine, let us apply it to the White Grub. This pest is the larva of the beetle (shown in fig. 1) *Lechnosterna fusca*, well known as May-bug, June-bug, and Dor-bug; they find their way into houses in early summer, being attracted by the light. The female beetle lays her eggs in the earth; the young grubs (larvæ) are hatched from these, and go about to find their food. But little is known of their history for the first year; no special damage is traced to them, and it is supposed that they live on small root fibres, the loss of which is not noticed. In their second year they make their presence felt; they appear then to work just below the surface, and as already stated devour almost every root or other vegetable substance they find. At this time they are of the shape of fig. 2; when full-grown, somewhat larger. The body is of a dirty white color, the head is brownish. In the spring of the third year, the grub having made its full growth, it goes into the chrysalis state, and in May or June comes out as a beetle. The perfect insect, or beetle,

is also destructive; it collects upon fruit and other trees and devours their foliage. The beetles seem to be quiet in the day-time, but in the evening are very busy; they pair, lay eggs, and the mischief continues. While there are some beetles every year from scattered grubs, the great crop for any particular locality appears once in three years, and one who has observed the year in which they abound, will know when to look for the ravages of the grub. Some think that the White Grub is brought to their gardens in the manure, which is a mistake; the Manure Grub, though of about the same general appearance, belongs to a very different insect, and the two have but little in common. With this brief review of the habits of the White Grub, we will leave the methods that have been proposed for destroying it to be given another month.

Multiplying Strawberry Plants.

With a new and rare variety of Strawberry, it is desirable to multiply it as rapidly as possible. Not only does the nurseryman wish to do this, as a matter of profit, but the amateur who has invested in a few high-priced plants would increase these sufficiently to make a productive bed as soon as may be. Ordinarily, the runners are left to take care of themselves, and it sometimes happens that many fail to strike root; when the soil is too dry, or the plants are in a bleak place, and whipped about by strong winds, there will be many failures. With scarce kinds it will pay to secure a plant from each runner—or rather from each bud on every runner, which may be done by fastening them in place with a bent or forked twig, or by laying a clod of earth on the runner. Where the failure is from drouth, the soil should be mulched with cut straw, and watered after the runners have been fastened down; cut straw is more convenient than long, for this use, as it may be more readily worked in among the old and young plants. Our old horticultural friend, Sam'l Miller, the originator of the "Martha" and other grapes, writes us from Sedalia, Mo., that owing to an excessive drouth last summer his runners could not take root; he picked off the buds—or young plants without roots—at the ends of the runners, and packed them in damp moss. In a few days roots were emitted, when the little plants were set out in beds, shaded for a time, and they made a satisfactory growth. When the Agriculturist Strawberry first came out, a cultivator of our acquaintance followed a similar plan. When cold weather came, his few plants had many runners that had not taken root; these would be lost, if left as they were, so he gathered them and set them out in a cold-frame; the next spring they were well rooted plants ready for sale or planting.

Winter Protection.—Probably more plants are killed by too much protection than by the want of any covering. Some plants, like the strawberry, are perfectly hardy, yet we advise covering them, not so much to shield them from the cold, as to prevent the frequent freezing and thawing of the soil; such protection should be mainly around, and but little upon the plants, and it is better to not put it on at all until the ground has actually frozen. Shrubs just on the border between tender and hardy were formerly completely bundled up with straw, and if they were evergreens, were often smothered to death, between which and freezing there is little choice. One of the most efficient methods of protecting shrubs of this kind, where the material is available, is to procure boughs of cedar or other evergreen, and set these in the ground close to the bush or young tree to be protected. In the absence of evergreens we have succeeded well by placing naked branches or brush around the half hardy plants, and working in straw among them. The object is to ward off severe winds, to give partial shade and to modify sudden changes of temperature, yet, at the same time, to allow a full circulation of air. Hardy herbaceous plants bloom all the stronger for being covered in winter; for this purpose, leaves serve an excellent purpose. When first put on, they are liable to be blown about; sprinkle a little earth over them.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

How Common Lamps Waste Light.

Did it ever occur to the reader, that most of the common lamps actually waste one-half or more of all the light produced, and are therefore doubly expensive? The flame gives off rays from its surface; but if we half cover the flame, half of the rays are intercepted and lost. This is just what is done in a majority of lamps. Figure 1 shows this. The metal cap, *a*, partly covers the flame; only the portion that rises above *a* gives out light to the room. In several of the lamps now made, this loss is saved by omitting the metal cap, and having the glass chimney set down below the bottom of the flame, as in figures 2 and 3. Such an arrangement is equivalent to saving half the expense of oil.—The Argand principle is of great utility. This is an arrangement for having a current of air pass

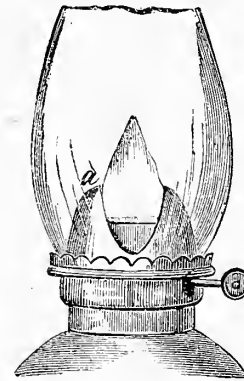


Fig. 1.



Fig. 2.

up through the center of a circular flame, furnishing oxygen to its interior. The combustion is much more intense, and the light correspondingly greater.

Home Topics.

BY FAITH ROCHESTER.

Warm Underclothes for Children.

The cool days that come now, more and more wintry in their suggestions, set mothers to thinking about the winter clothing of the family. Let no thoughtlessness or negligence hinder the preparation of warm under-garments, especially for the children. We used to think that little boys had much the advantage of little girls, in having warmer and more equal clothing over their whole bodies. But the fashion of short trousers leaves their legs below the knees no better protected than those of little girls—unless, indeed, they are more likely to be provided with long under-drawers. Many fashionably-dressed little boys are not so provided for. Through ignorance or indifference, their mothers sacrifice future health and manly beauty to present prettiness, and in this unreasonable and unkind manner, the majority of little girls are treated. No one can tell how much this has to do with the general ill-health of women. The children are supposed to be growing "tough," but it is often the case that the vitality is too much drawn upon and the constitution gradually undermined, so that many children who seem to be enduring all things wonderfully, are really among those who "die in the toughening," though the death is long postponed and approaches gradually at last. Make the under-garments of flannel or fleecy cotton flannel, and let them cover the body from neck to wrists and ankles. They may be made all in one



Fig. 3.

piece, or in two pieces, as preferred. For young children it is often more convenient to have the lower garments made separate from the upper, and buttoned to them. But the whole garment is easiest made and managed for most children, much

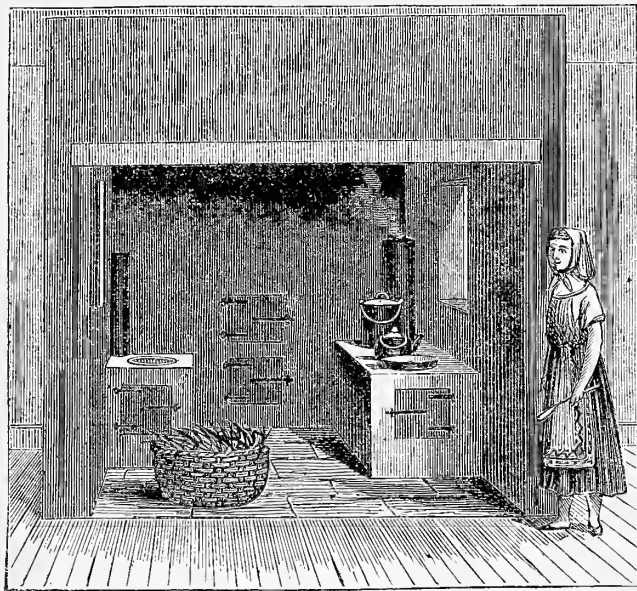


Fig. 1.—INTERIOR OF MENNONITE KITCHEN.

like the long night-drawers. The legs should gore down to the ankles inside the stockings by both an inner and outer seam. The one on the inside of the leg should be left open a few inches to lap over smoothly under the stocking. It should always reach down inside the shoe-top. After this garment has been put on the child, there comes next a stout waist with buttons around the bottom, to which are attached the dress-drawers (whether of white cotton or of colored flannel) and the petticoat. The latter may be basted strongly to the waist for the reason, if both are colored, seldom needing washing. To the side buttons of this waist (under the arms) are buttoned the stocking supporters or garters, either those patented and bought at the shops, or home-made garters—strips of elastic tape with button holes in the wide cloth binding at each end. One end of this garter buttons at the waist, the other fastens on a button upon the side of the stocking outside the leg. Then comes the dress. If all button behind, you can dress and undress the child very quickly after the shoes and stockings are taken off. Unbutton all of the garments behind, and slip them all off together, and replace the set of day garments by a warm well-aired night-gown. We mostly use soft thick factory cloth (or unbleached muslin), and I suppose other poor folks do the same, but flannel for winter is to be preferred, especially for little ones apt to get uncovered in bed. During the night the set of day garments may be placed so as to be well aired in the inside, without separating them, and in the morning the child can slip them on all together with ease. Perhaps I have told all this be-

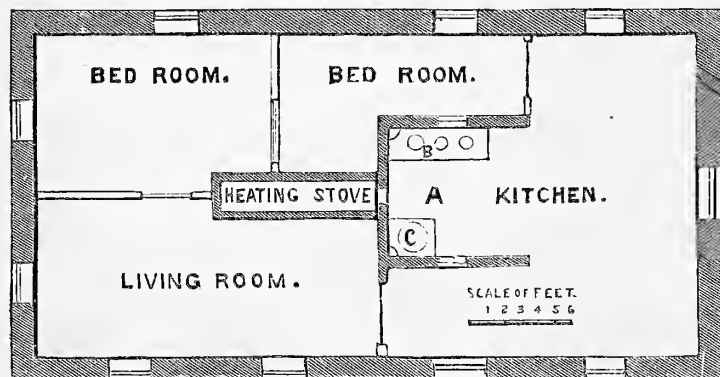


Fig. 2.—PLAN OF MENNONITE HOUSE.—(A, Chimney; B, Cooking; C, Washing Ranges.)

fore, but I see more and more how little is known or thought by mothers, about the healthful dressing of children in cold weather, and I hardly think I need apologize for returning to the subject.

Sunny Rooms.

I told a neighbor, lately, that the chief objection I had to a house under consideration as our future residence, was that I feared the sun would not shine into the rooms enough to suit me. She laughed as though that was a new idea to her, and quite whimsical. The blinds on the house were not objectionable, as I should leave them wide open, except on rare occasions. But the wide verandas on the east and south sides, would totally exclude the friendly sunbeams from the common sitting room. Even in summer I should not like that, as there are many cool days when sunshine is far better than a fire. My neighbor said that it always made her feel nervous to have the sun shine directly into her rooms. Now sunshine is one of the best remedies for nervousness, but I understood my neighbor to mean that the prying sunshine searching out every speck of dust and tiny cobweb before concealed by habitual shade, made her feel uneasy. Moreover, the colors of the carpet must be preserved, and sunshine fades them. And so my neighbor pays the doctor for her medicine instead of

taking it as a free gift from Heaven in the bright sunshine and pure air—for I think she dreads air as much as sunshine, except when she goes out doors occasionally to get them. I like a broad piazza or generous porches about my house, but I want my windows free from even too much curtain. Unless in hot weather, when almost anything ails you, and you feel disinclined to out door exercise, the best thing you can do is to sit down in the broad smile of a sunny window and let the sunbeams put new life into you. If your feet are cold, the sun will warm them more thoroughly and permanently than a fire, especially if you take off your shoes and put your feet on a stool or chair in the full sunshine. For neuralgia I know nothing better, in connection with fasting from one or two meals, than to lie in the full sunshine, all but the top of your head, which may be protected; cover up warm if the room is cold, but let everything about your body be loose and well aired.

Bread Pancakes.

For those who have milk, a convenient way to use up old bread is, to make it into pancakes. This is a good way to use sour bread also, as a trifle more soda than the sour milk requires to neutralize it will sweeten the sour bread too. Soak the bread crumbs, (a quart or less) for a few hours in as little sweet milk as will answer. Then mash them with a four tined fork, or otherwise reduce them to an even consistency. Add a teacupful of sour milk, a half teaspoonful of soda dissolved in tepid water, and flour enough to make a batter just right to bake the cakes light without being too thick and hard. Try a little on your hot buttered griddle if you are in doubt about it. Eggs are not necessary to make light good wholesome

pancakes of this kind, but when not too expensive, they add greatly to their delicacy and goodness.—Two, three, or four eggs, as you can spare them.

How the Mennonites Warm their Houses and Cook with Straw as Fuel.

The European Mennonites, whose religion prohibits bearing arms, have within a few years come to this country in large numbers, and have formed already prosperous colonies in Kansas and other Western States. In their new homes they follow their former pursuit—farming, and many of them brought with them the implements they formerly used, affairs so quaint and cumbersome, that they appear more like a collection of antiquities than articles for real use. Besides their farm implements, they brought over their household effects, conspicuous among which are a large clock to hang upon the wall, and a huge, curiously ornamented chest to hold the household treasures; these are to be seen in almost every Mennonite home. Though they could not well bring their enormous stoves to their new homes, they have brought their domestic customs with them, and the house in Wisconsin and Kansas is heated, and their meals are cooked in the same manner that they were in the old home in Russia and Prussia. Mr. H. Worrall, of Shawnee Co., Kas., sends us several remarkably neat sketches of Mennonite interiors, made with special reference to their methods of warming and cooking by the use of such an unusual fuel as straw. A portion of his sketches have been engraved and are given here. He also furnishes the following description: “The Americans burn money, we burn straw,”

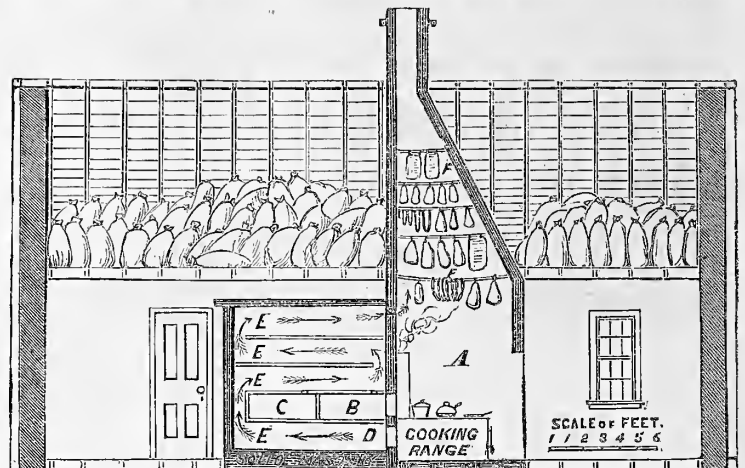


Fig. 3.—SECTION OF MENNONITE HOUSE.

A, Fire Place; B, C, Ovens; D, Door for Firing; E, E, Flues in Stove.

says the Mennonite settler; how they manage to keep warm in winter, and to cook the year round with no other fuel but loose straw, is a mystery to the average American. The Mennonite immigrant, when choosing a locality, is quite unconcerned at the total absence of timber, and will settle many miles from wood or coal, with indifference as to the fuel question, in localities where an American would never think of making a farm. He sees fuel for the first year in the miles of grass about him, the second and succeeding years he will have the straw from his crops, and straw stacks are his favorite substitute for the wood-pile and the coal-bin.

“We first saw straw in use for fuel at the house of a Russian Mennonite bishop in the colony in McPherson Co., Kansas. Dinner for four of us was to be prepared. A vigorous young Mennonite girl vanished with a bushel basket, and returned with it full of loose straw, then placing her kettles, etc., on the top of the cook range, fig. 1, opened the fire-door, and thrust in two large handfuls of straw, touched the match, closed the door, and the kettle commenced singing almost immediately; in about two minutes the door was again opened, and two more handfuls of straw were thrust in and the door closed. Our dinner consisted of ham, eggs, potatoes, Russian waffles, and excellent coffee, all cooked in less time than an ordinary stove could have been made ‘hot for biscuits.’ The fire was ‘dead out’ before the dinner was half consumed.

and the house none the warmer for the fire, the surplus heat all escaping through the broad chimney.

"The cooking place and doors of the straw stove that heats the building, are all in the base of the chimney, which is eight feet square, with a stone floor; the walls are vertical for about 8 feet, when they are gradually brought in, reducing the interior of the chimney to about 12 inches at the comb of the roof. Figure 3 is a lengthwise section of a house of this kind. The upper portion of the chimney is the family smoke-house, in which are stored hams, shoulders, sides, and festoons of sausages hung on poles, permanently set in the walls, access being had to them by a ladder. On one side of the base is a large cauldron, for wash days, set in a furnace of adobe or *sun-dried* bricks; on the other side the cooking-range, also of adobe, having a sheet-iron top, with holes cut for the pots and kettles; both ranges, that for washing, and the one for cooking, have a flue of adobe four feet high.

"The heating stove, seen in section in fig. 3, and in the ground-plan, fig. 2, is 9 feet long, 8 ft. 6 in. high, and nearly 3 ft. wide, and forms part of

have been superseded by various liquid cleansing compounds. The cheaper kinds are simply Fuller's Earth, but the best are made of Fuller's Earth, soap, and ox-gall, made into balls, and dried. The active ingredient is ox-gall, which is quite as well used alone. It is an excellent article for removing

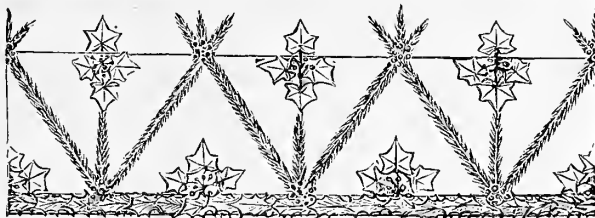


Fig. 1.—DESIGN FOR TRIMMING A ROOM.

all grease-spots from silks, etc., as it will unite with the grease without injury to the fabric. It may be used fresh, as obtained from the butcher, or the "prepared gall" may be had at the drug stores.

POLISHING COLLARS AND BOSOMS.—"M. J.," Hot Springs, Ark. No "recipe for starch" will be of much use in polishing linen, without the right kind of an iron rightly applied. A small lump of sper-

macti or white wax, or a little gum arabic, added to the starch, is thought to help, but the polish mainly comes from the iron. What are known as polishing irons have rounded corners, and the surface has a high

polish; hard rubbing and repeated of the starched linen with these brings the smooth shining surface seen in new shirts. Irons of this description are kept at house-furnishing and hardware stores.

SALT RAISING.—This must be set very early in the morning, if it is wished to bake the same day; set a sponge as follows: one quart of warm water, or milk and water; one tea-spoon salt; one-half tea-spoon soda; flour to make a soft batter; let it raise four hours; then sift two quarts flour into a pan and pour the sponge into the center, add one quart warm milk, and mix in flour enough to stiffen. Let it raise one hour—mould into loaves. Let it raise once more and bake in a rather moderate oven.

WHITE SPONGE CAKE, by Mrs. "S. A. R."—The whites of 11 eggs beaten to a stiff froth, 1½ glass of white sugar, 1 glass of flour, 1 teaspoonful cream of tartar; flavor with lemon, to taste; bake in half



Fig. 3.—TO HANG ON THE WALL.

an hour; sift the flour two or three times, so as to have it light as possible. Do not grease the pans you bake in, but when the cake is well baked, turn the pan top down, supported by something, and the cake will drop out in a short time. We suppose from directing Cream of Tartar, the omission of soda was accidental; either half as much of this should be added or the Cream of Tartar omitted.

Christmas Decorations at Home.

The remarks last month on Christmas Decorations had special reference to beautifying churches, but much that is said there as to ways and means will apply equally well to home decorations. Whatever may be done with the church, where the work, however elaborate, will be seen for but a few hours, let the home by all means be made bright and cheerful in this holiday time. Whoever visits New York City within a week of Christmas should not fail to make a tour of the streets near Washington Market, and see the immense quantities of evergreens on sale. There are great piles stacked in the streets and on the walks, and the whole neighborhood has for the time an unwonted fragrance of the woods. The purchaser can find large and small trees, short and long wreaths, with ready-made rings, crosses, stars, and many other devices. The decoration of the house may be as simple or as elaborate as one chooses; some do nothing more than to place a green wreath at each window facing the street, while others make carefully wrought designs for the principal rooms. Slender wreaths may be used in a great variety of tasteful decoration; the best material for these is the *Lyceopodiums* or Club Mosses, especially the one known as "Ground Pine" or "Bouquet Green," as its rich dark color and finely divided branches especially adapt it to this use. Suggestions for making wreaths were given last month; they may be hung over pictures, festooned



Fig. 2.—TO DECORATE A CORNICE OR DOORWAY.

along the cornice, and be worked into numerous tasteful shapes. In towns and cities the room is usually lighted with gas, and the chandelier forms a central point for decoration which should be treated with special care. But every farm-house can have some cheerful natural ornament, even if it be but branches of evergreens.

LETTERS FOR MOTTOES

are cut out of stiff brown paper, and should be of that style of letter known to printers as gothic, the forms as seen in this specimen, are very **SIMPLE**, and may be cut out by those who have little skill in lettering; they appear distinct and bold when covered with green. Holly, the best material for covering letters, is very rare with us, except in a few localities; small twigs of Arbor Vitæ and Box may be used, as may the leaves of Laurel (Kalmia), Rhododendron, Inkberry, or whatever broad leaved evergreen the locality may afford. The green is to be sewed to the paper pattern with dark green or black thread, and the edges kept very even to preserve a well-defined outline. Sometimes it is desirable to use white letters on a back-ground of green or other dark color; these may be cut from stiff white paper or card-board. It is recommended to cover the letters with mullage of gum Arabic, and sprinkle them thickly with rice grains. This is said (we have not tried it) to give the letters a rich appearance. Miss Massard, who is the great authority on floral decoration in England, makes use of perforated zinc as the foundation for her

MORE ELABORATE DESIGNS,

figs. 1 and 2 being from her work on "Floral Decorations." Perforated zinc is sheet zinc filled with small holes, after the manner of perforated card-board, which allow the leaves to be sewed to it. The engravings represent designs to go around the upper part of a room, along the cornice, or over a large doorway. Another of Miss H.'s designs is given in figure 3; this is also made on a foundation of perforated zinc. Such figures as this may be hung against the bare wall between pictures, over the mantle-piece, or wherever there is suitable space.

PICTURE AND MIRROR FRAMES

may be ornamented by placing a wreath to cover the cord (it may be tied to it if necessary), and long enough to hang down the sides of the frame. A very pretty effect is produced by making a frame of light lath, and neatly covering it with evergreens, bound on as directed last month for wreaths. This should be of the proper size to slip upon the frame, and it may be held in place by a fine wire and small tacks, which may be driven into the back of the frame without injury. If preferred, a frame of green may be made, to be suspended in front of and quite hide the proper frame of the picture; fine wire will come in play here as in many other cases... Where living plants are at command, they may be introduced as a part of the decoration with good effect, and for this purpose it is not necessary that they should be in flower.

FRUITS, FLOWERS, ETC.

Bits of color may be introduced in contrast with the green, and for this purpose bright colored berries seem more appropriate to the season than flowers. Berries of



Fig. 4.—MENNONITE WOMAN COOKING AT A HEARTH.

the partitions of the three rooms heated by it. The ovens in this stove are formed at top and bottom of narrow plates of rough cast iron, set loosely in the stove walls, to admit of expansion and contraction, the doors are of sheet iron, and the walls two bricks thick. In ordinary winter weather, fire is made in the stove every morning, when two good armfuls of straw is consumed in from 20 to 30 minutes, this heats the stove sufficiently for the whole day; in very cold weather, the fire is made two or three times each day, burning an equal amount of straw at each firing. So soon as the fire is out, the flue connecting the stove with the chimney is carefully closed by a damper, in order to retain the heat. Bread is baked in the ovens, and also in the fire chamber of the heating stove, where it is placed, immediately after firing, on a wrought iron stool, which will keep it above the ashes of the straw.

"The most primitive cooking arrangement was seen in Harvey Co., it being a 'hearth,' like that in figure 4. This is merely a block of adobe or masonry, two feet high, built in the base of the ordinary style of chimney. The cooking is done on this by building a fire with straw and corn-cobs under each cooking vessel, much the same as with persons camping out. The material used in the construction of these straw-burning stoves is brick, stone, and adobe; brick is preferred, next stone and adobe for economy in the first construction.

Household Notes and Queries.

"SCOURING-BALLS"—OX-GALL.—Mrs. "V. L. A.," Akron, O. These are very old affairs, much more used in England than with us, where they

the Black Alder, or Winterberry, which is own brother to the Holly, are very brilliant. Holly berries, the capsules of Climbing Bitter-sweet, or Wax-work, and other bright fruits, may be used. If flowers are employed, they will naturally be those of the everlastings, such as Helichrysms, and imported Immortelles. Scarlet and crimson colors are to be preferred; yellow, if used at all, should be introduced very sparingly, as it gives a garish effect, out of place at this season. Some choice design may occupy a conspicuous position on the mantel-piece, and for this, if there is a greenhouse, some nice bits of foliage may be spared, such as leaves of the Auenba (Gold-dust Plant), Lanrustinus, Bay Laurel, or whatever broad-leaved evergreen can part with a few leaves without detriment, not forgetting Ardisia, which has both leaves and berries. In such a design the leaves and berries of the Creeping Partridge-Berry (*Mitchella*) and Checkerberry, with bright colored lichens, may be worked in. A very pretty effect may be produced by "frosting" some parts of the decoration. What is sold at the paint and drug shops as "frosting," is glass in the thinnest possible scales; this is to be broken into small fragments and sprinkled upon leaves that have been touched with gum water; it glistens like frost.

BOYS & GIRLS' COLUMNS.

The Young Microscopist's Club.

It is rather too late in the year to talk about plants to most of you, but as I began to tell you a little about what are called the lower plants, and there is but one family left to be noticed, I will say something about that to complete the list. I have only tried to show you enough about these plants to allow you, especially with the help of your Microscope, to know a moss from a fern, a lichen from a moss, and so on. We now come to the *Algae*—the plural for *Alga*, the Latin word for seaweed. As we have no good common name for these plants, you must use the scientific one, and when you pronounce it, recollect that the *g* is hard in *Alga* and soft in *Algae* (as if written *Algha* and *Aljee*). "Sea-weeds" will hardly do as a common name for these plants, for while all true sea-weeds are *Algae*, all *Algae* are not sea-weeds, a great number belonging to fresh water. You will remember that I told you that all these plants, the club-mosses, the ferns, the mosses, the fungi, etc., were called *flowerless plants*, as they have no real flowers and seeds; the *Algae* are also *flowerless*. Among them we find the most minute and simplest of vegetable forms. As a general thing,

ALGAE ARE WATER PLANTS.

The few that do not live in the water are found in moist places. They inhabit both salt and fresh water, and like the other *flowerless plants*, have minute bodies called *spores* to answer for seeds. We find here a wonderful range in size, some being so small that you could hardly see them with your Microscope, up to some giant sea-weeds, the tallest—or longest—of all plants, over 700 feet in length. Being surrounded by water from which they absorb nourishment, they have no need of roots to

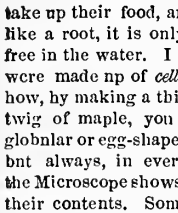


Fig. 2.

take up their food, and while some have what appears like a root, it is only to anchor them, while many float free in the water. I have already told you that all plants were made up of *cells*, and pointed out in a former talk how, by making a thin slice of corn-stalk, and of a young twig of maple, you could see these cells—sometimes globular or egg-shaped, sometimes longer and thread-like, but always, in every plant and every part of a plant, the Microscope shows nothing but cells of some kind, and their contents. Some of the *Algae* are so small that they

CONSIST OF A SINGLE CELL;

a mere bag without opening, and so minute that your Microscope would not just allow you to see it. I give some engravings to show how a plant of this kind looks with a very powerful glass. The green scum found in damp places is often an *Alga* of this kind. When largely magnified it is found to be made up of bodies like fig. 1. A tiny transparent bag, filled with greenish matter. A little thing—but to me one of the most wonderful things in the world! For here you have a *whole plant*, which can do all that any plant can—*e. i.* it can live, grow, and multiply. It has no root, stem, leaf, or flowers, and yet is as much of a plant (in one sense) as those having all these parts. When one of these plants gets its full size—*i. e.* we can conceive of so minute a thing having size—the green matter within slowly divides, as in fig. 2, and these halves divide again, as seen in fig. 3. A cover-

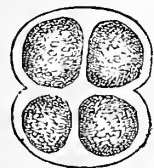


Fig. 3.

ing forms over each of these tiny green masses, and they really become young plants, just like the original, except in size. In time the wall of the mother cell breaks away and lets out these little ones; they soon grow to the full size, and go through with the same changes again; thus these minute plants increase very fast. It is only a small number of the *Algae* that are so small and simple as this. Many, like the Brook-silk, described in April last, consist of many long cells placed end to end, to form a thread (fig. 4). In others the cells are not only placed end to end, but side by side, to make a thin sheet or plate. Those who live near the seashore can find a great many forms of *Algae*, from the delicate kinds called "Sea Mosses," up to the coarse Rock-weed, and still larger Sea-weed called Kelp. That which is sold in the shops as

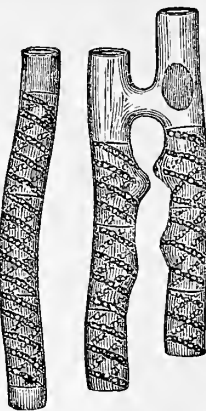


Fig. 4.—BROOK SILK.

"IRISH MOSS"

is a good example of one of the medium-sized sea-weeds, and by soaking up a bit of this you can see its real shape. The larger sea-weeds have fruit-dots, or places to hold their spores... You see what a wonderful variety plant life presents—from the minute *Alga* just described, up to the towering oak and pine; the *Alga* is but one simple rounded cell—the tree is only a mass of cells, some round, some long, and of different sizes, but all so minute as to require a microscope if we would see them... Among other queries, one boy wishes to know if our Microscope

WILL SHOW THE CRYSTALS IN SNOW.

I understand what he means; he has read of snow crystals and would like to see them. He can do so if he is patient and watches his chance, as all snow does not show them. The large flakes are confused masses, and do not show the crystalline form. It is only when the snow comes down so fine that it hardly makes any show in the air, but sifts down dry and almost dustlike, that you will find crystals. If you find snow on your coat sleeve as very minute dry spangles, you can see, without a glass, that it has a regular form, and if you use the glass you may see some of the forms shown in fig. 5, or others much like them, for there is a great variety among them. Sometimes the snow will be all mere six-sided plates, as shown at the left-hand in the middle row. I have seen them much like that at the right-hand of the middle row, and like the one under it with the spaces between the arms not so deep. The more beautiful crystals in the engraving are from drawings made in the Arctic regions. You must recollect that you can not take the snow crystals to your Microscope in a warm room and examine them at your leisure, but you must take your

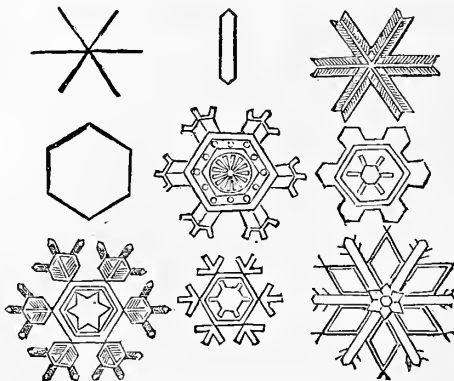


Fig. 5.—SNOW CRYSTALS.

Microscope to your crystals. The glasses must be removed from the stand and used as a hand glass. Catch the snow on a piece of dark woollen cloth, and when you examine the crystals, try to keep your breath away from the glasses, else it will collect on them as frost and prevent you from seeing anything, and also melt the snow.

Our Puzzle-Box.

CROSS-WORD.

My first is in blossom but not in fruit,
My next is in wardrobe but not in suit,
My third is in ladder but not in food,
My fourth is in lovely but not in good,
My fifth is in liner but not in wait,
My sixth is in happy but not in great,
My seventh is in ocean but not in lake,
My eighth is in oven but not in cake,
My ninth is in barter but not in buy,
My tenth is in heaven but not in sky.
The letters, if placed aright, will show
One of our measures, which perhaps you know.

BIBLICAL DOUBLE ACROSTIC.

1. A son of Jacob and Rachel.
2. A battle-field of Joshua.
3. A district of Canaan.
4. A scriptural image of slavery.
5. Fifty-five.
6. A tree and its fruit.
7. A village of Palestine.

The initials and finals give the name of two celebrated ancient cities.

ISOLA.

NUMERICAL ENIGMAS.

1. I am composed of 19 letters:
My 5, 16, 17, is a tree.
My 2, 3, 15, 9, is an animal.
My 7, 8, 12, 16, we have been advised to let alone.
My 17, 5, 13, 1, 9, is a kind of fruit.
My 14, 1, 6, 19, 11, is an animal.
My 10, 11, 9, 4, 18, 6, is a city in Colorado.
My 18, 6, 3, 11, is a city in Pennsylvania.
My 14, 3, 9, 10, 15, 1, is one of a certain race of men.
My whole is an American poet. K. P. N.
2. I am composed of 13 letters:
My 1, 5, 12, 11, 13, is a species of heron, and a name for rice not divested of the husk.
My 8, 9, 7, 3, is a drink used by the peasants of Russia.
My 6, 10, 1, is a household article not as much used as formerly.
My 4, 2, 6, is a boy's nickname.
My whole is a bay on the coast of one of the United States. C. W. SHELMIER.
3. I am composed of 18 letters:
My 11, 13, 5, 17, 14, 15, is a fruit.
My 2, 18, 6, 3, 7, 14, 1, 8, may he seen on the face.
My 11, 10, 9, 2, 17, is a beverage.
My 4, 16, 12, 13, 15, is a fabric.
My whole is often consulted. L. N. J.

PUZZLE.

From what word can you take "six" and transpose the remaining letters into the fruit of an evergreen?

CHARADE.

When you come in from walking
My first doth meet your view;
Mind do not miss my second
Whatever else you do:
For, in this frosty weather,
With care my second take,
As, if you stumble on my whole,
You might produce an ache. Jos. H. BIRD.

ANSWER TO JOE LIVINGSTON'S PROBLEM.

1 woman at 50c.....	50
6 children at 25c.....	\$1.50
5 men at \$2.....	10.00
12 persons.....	\$12.00

SOLUTION TO THE PEDESTRIAN PROBLEM.

A takes 5 steps while B takes 4; A, therefore, takes $\frac{5}{4}$ as many as B. 3 of A's steps are equal to 2 of B's; A, therefore, steps $\frac{3}{2}$ as far as B. Multiply $\frac{5}{4} \times \frac{3}{2} = \frac{15}{8}$, which represents the value of A's effort as compared with B's, and makes it plain that A goes 10 miles while B goes 12 miles. Now by simple proportion, if A goes 10 miles while B goes 12 miles, then A will go 25 miles while B goes 30 miles. At 30 miles from the start they are together, and while B was walking that 30 miles, A walked only 25; hence A must have been 5 miles on the road when B started.

ANSWERS TO PUZZLES IN THE OCTOBER NUMBER.

NUMERICAL ENIGMA.—Do unto others as you would have others do unto you.

ANAGRAMMATICAL SQUARE
WORD.
S N O W
N O N E
O N U S
W E S T

CONCEALED NAMES.—1. Amy. 2. Bertha. 3. Ellen. 4. Ada. 5. Della. 6. Eve. 7. Esther. 8. Emma. 9. Dora. 10. Frances.

PI.—Hasty resolutions seldom speed well.
CONCEALED MAGAZINES AND PAPERS.—1. Post. 2. Herald. 3. Times. 4. Press. 5. Sun. 6. Harper.

CROSS-WORD.—Merchant of Venice.

SCIENTIFIC ACROSTIC.

N—itr —E
I—nfusoria —L
T—rormulin —E
R—hodiu —M
O—r —E
G—nomo —N
E—rgo —T
N—itride —S

RHOMBIC PUZZLE.

Amen
Even
Ewes
Stop

ABBREVIATIONS.—1. Black. 2. Coney, one. 3. Crate. 4. Elegy, leg. 5. Grape. 6. Rap.

ANAGRAMS.—1. Triumphantly. 2. Floundering. 3. Imprisonment. 4. Energetically. 5. Promiseous. 6. Gooseberries. 7. Disconsolate. 8. Wearisome. 9. Ejaculates. 10. Disobedience.

Puzzles, answers, and such matters as were formerly directed to "Annt Sue," may hereafter be sent to "The Doctor," No. 245 Broadway, New York.

Some Items About Sugar.

On an average, every man, woman, and child in the United States consumes each year about 30 pounds of cane sugar, and nearly 2 gallons of molasses, besides maple sugar, honey, and other sweets... 19 lbs. of pure cane sugar is actually made up of, and can be changed into 8 lbs. of charcoal and 11 lbs. of water! Pure white starch is made up of 8 lbs. of charcoal (carbon) and 10 lbs. of water. Any boy can demonstrate this roughly by putting a small quantity of sugar on a piece of thin iron over a hot lamp or coals, and hold over it a glass jar bottom up. The sugar will change to pure charcoal, while the water will rise up and condense on the inside of the jar, if it be kept cool, and he will get nothing from the sugar but coal and water. The chemist can easily take the 19 lbs.

of sugar and change it into 8 lbs. of charcoal and 11 lbs. of pure water, though he has not yet learned how to put the coal and the elements of the water together to produce the sugar. That requires the action of the living plant....Our sugar comes mainly from the sugar cane grown in the Southern States (most from Louisiana), and from the West India Islands. The canes are somewhat like corn-stalks, but larger, taller, with narrower leaves. The sap or juice of the cane is pressed out between iron rollers, then boiled down to syrup, which crystallizes into sugar grains in large vats....Most of the sugar used in Europe is from the juice of the sugar-beet. It is similar to our cane sugar....The raw sugar is refined chiefly in

simple bodies or elements. Oxygen is an element, so is Nitrogen—but you can not see these. Sulphur (or Brimstone) is an element, so is Quicksilver (or Mercury), so are Iron and Gold when pure. You all know how Sulphur looks. Well, chemists, let them try their best can not separate it into any other substances—it is sulphur and nothing else. When a substance is found that contains only one kind of matter, and that no skill of the chemist will separate into two kinds, that is called an element. Thus far there are about 63 elements. In the air Oxygen and Nitrogen are merely mixed, the Oxygen is just as much Oxygen, and the Nitrogen just as much Nitrogen as before. But these elements unite

to form compounds, and when they do this the compound is quite unlike either element in every respect. Sulphur and Quicksilver unite to form the beautiful red vermilion, quite unlike either. Iron unites with Oxygen, and we have Iron Rust—quite different from Iron—and finally Oxygen and Nitrogen, which, when mixed in the air, are breathed, can be made to unite and form a most powerful acid—Nitric Acid (Aqua-fortis)—and so changed are they, so different the compound from the elements of which it is made, that the vapor suffocates at once, and the acid dropped on the flesh at once kills and destroys it.

THIS BRIEF LESSON IN CHEMISTRY

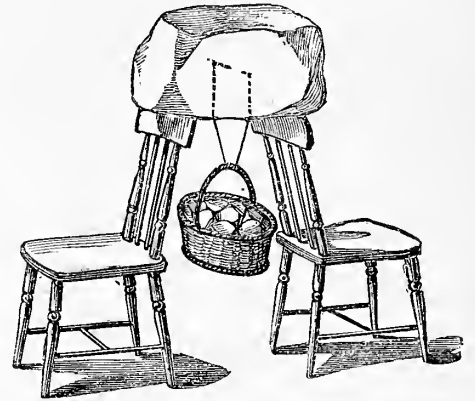
will give Master "G." and the rest of you something to think of. Now for the rest of the question. We may say that the Oxygen in the air we breathe does cause the heat of the body. He then says "if Oxygen is so hot, why is it that a fish which lives in among so much Oxygen, is so cold?"—He does not say so, but having heard that water is a large part Oxygen, he wonders why it is so cold. He starts with a wrong idea. "If Oxygen is so hot"—but it isn't hot, and the rest of his question goes for nothing. Still it allows me to say one more important thing. When these elements unite to form compounds, heat is usually given out, especially when one element is a gas, like Oxygen. Oxygen by itself is neither hot nor cold,

BUT IT PRODUCES HEAT

when it unites with other elements: when it unites with sulphur, heat is given off, when it unites with coal (carbon) we have heat accompanying the change, when it unites with wood, (carbon and hydrogen) there is heat. All our artificial heat comes from the union of oxygen with the fuel....But to go from heat to cold. Here is "S. C." of New Jersey, who has been reading about glaciers—those great fields of ice found in the Alps and other high mountain ranges, where there is perpetual snow. They are often several miles long, a half a mile and more wide, and occupying a valley, appear like a river of ice and—what is very wonderful—like a river, glaciers flow downward.

What troubles young S. C., is this, if glaciers are solid ice, how can they move or flow like a stream, for a book he has read, states that "a hut which Agassiz built on a glacier, moved 486 feet in two years." The flow of the ice of glaciers has been carefully studied by several philosophers, and they differ as to the matter. The cause of the movement is pressure from above, but how solid ice can flow, and go down as it must, over steep places, and still remain solid has long been a puzzle. Discover-

ies about ice made not many years ago, help explain the glacier movement. It has been found that when ice is under great pressure, it melts, and when this pressure is removed it becomes solid again; also that when two



EXPERIMENT WITH ICE.

smooth surfaces of ice are brought together, they at once freeze together and become solid. This property of ice is called REGELATION.

The explanation given of this is hardly suited to youngsters, who must for the present accept the fact that it is so, and that it is so they can prove by a very pretty experiment. Support a block of ice by the ends, two chairs will do, as shown in the engraving; I had occasion to show it some time ago, and set the block upon the bars of a partly open clothes-horse. Pass a copper wire, the size of a knitting needle or finer, over the block, and suspend a weight to it; I used two big stone hammers as they were at hand, but a basket of stones or other weight will answer. The ice under the wire will melt, the wire sinks in, and as it does so, regelation takes place, the water above the wire will at once freeze, and in a few hours the wire will be half way through the ice, with the block just as solid as ever. I tried it on a warm Autumn day, with the thermometer about 70°—for no matter how familiar I may be with an experiment, when I tell you about it, I always try it to see what difficulties you are likely to meet with when you undertake it. Now to apply this to the glacier; it is supposed that where the pressure is greatest, the ice melts, and parts of the mass can thus move and adjust themselves, and as soon as the pressure is relieved the ice becomes solid again—that the flow is a succession of meltings and freezings.

Winter Ways and Sports.

If one would see how the people of the far north live, and how they amuse themselves, they should visit them in winter. Those who travel for amusement go north in



Fig. 1.—HUNTERS' CAMP.—A NOVICE TRYING SNOW-SHOES.

Northern cities, by dissolving it, straining it through cloth, and through burned bones, after which it is boiled down until thick enough to crystallize in grains.

The Doctor's Correspondence.

The letters accumulate, and I am surprised as I look back, to find how long it is since I answered any of them. Here is one from "R. J. P.," Mankato, Minn., enclosing a

LEAF WITH BLACK SPOTS,

and he wishes to know about them. I should have mentioned this when speaking about the "Cluster Cups" last month. Those, you recollect, are *Fungi*, small plants living on the substance of the leaf; this which our Minnesota friend sends is a fungus, but of another kind, and this is about all he can learn about it at present....Sometimes youngsters ask questions that are regular puzzles. To answer them one must go a long way back into first principles, and write a treatise on matters in general. One "G.," at Enreka, Mo., has given me several questions of this kind; of these I can try only one now. He asks:

"WHAT IS AIR COMPOSED OF?"

I think Oxygen, Hydrogen, and Nitrogen, but how much of each? Is it not the Oxygen in the air which we breathe that keeps up the heat of our bodies? Then if Oxygen is so hot, why is it that a fish which lives in among so much Oxygen, is so cold?"—This question, or rather series of questions, shows a desire to know about things, and that "G." thinks and reasons, but it also shows that he has either not had an opportunity of learning about the air, or that he has been imperfectly taught. Let us see if we can help him in this case. Firstly, as to

THE COMPOSITION OF AIR.

Air is essentially a mixture of Oxygen and Nitrogen, in the proportion of one measure of the first to four measures of the other. You will notice that I make two words prominent by putting them in *Italics*. Essentially, for there are other things found in the air: watery vapor or moisture, the amount varying with the temperature, and Carbonic Acid, about one measure in every 2,500 measures of air. A very small proportion you will think, but small as it is, it is very important; I can not tell you more about this now, except to say that it is very necessary to the growth of plants. Still smaller quantities—mere traces of other substances—are also found in the air, but we will not notice them. The other word that I marked is *mixture*. For I wish you to understand that air is

A MIXTURE AND NOT A COMPOUND.

Now how can I make "G." and the rest of you understand this? Let us see. Certain substances are called



Fig. 2.—WINTER SPORTS—THE HUNTER ON SNOW-SHOES.

summer, and to the far south in winter; this is a mistake, for they see neither part of the country at its best. In the far north, where winter is long and cold, the short summers are very hot, and those who go there in summer, find the people engaged in trying to keep cool, and fail to see their proper home-life and amusements. As



Fig. 3.—A TOBOGGANING PARTY.—A CANADIAN SCENE.

you boys and girls can not go north just now, we must bring some of their winter ways to you. Many of our youngsters live up in the country of long winters, and what we are to say will be an every day matter to them, and they may wonder how it can interest any one to learn about things that are so common to them. But such should recollect that these Boys and Girls' Columns are read by many a boy and girl that never made a snow ball, and never saw the water "go to sleep," as one little girl we heard of described the forming of ice. Our far northern friends this month expect—if they are not already in the midst of snows—not a few inches that will thaw into "splosh" the next sunshiny day, but snows that come to stay; not only are inches piled upon inches, but foot upon foot until the whole country is covered several feet thick with a covering that will stay until spring. At first soft and fleecy, it makes walking almost impossible; soon it settles somewhat, and a crust forms upon it, the crust in time gets so hard that one can walk upon it, but at first it breaks at every step, and the traveller finds it more difficult than before. But people must go from place to place, and as they can not get through the snow, they must get over it. So the Indians thought, long before the white man came, and they invented the Snow-shoe. The Indians have not invented many things, but here they were obliged to contrive something, and they hit upon the very thing, one so well suited to its use, that no white man has been able to improve upon it; in fact even to-day an Indian can build a better pair of shoes—so say those who use them—than the most skillful White. Had you never heard of a snow-shoe, and were

shown one, it would be a long while before you could guess what it was to be used for; as you can see by fig. 5, it looks very little like a shoe. The frame, light and strong, is of bent ash; the central part is a strong netting of raw hide of the horse or ox; the fine netting is of cotton twine now, but formerly the Indians used bark; there is a band for the toe, and a cord or thong to fasten it to the foot. It is about three feet long, and a foot or a foot and a half wide at the widest part. This is the form in general use by the lumbermen and others, but the Indians often make for their own use a little different style—with toes turned up as in fig. 4. So there are fashions, you see, even in snow-shoes. If you wished to stand on the soft snow, you would lay down a board to keep your feet from sinking in. That is the principle

goes under the strap, and the shoe made fast to the ankle. Being all ready, the novice has then to learn to walk; this is no easy matter at first, for the shoes interfere, and he is very apt to tread on his own toes, and

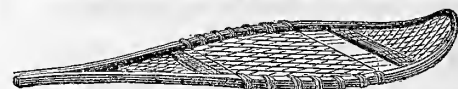


Fig. 4.—INDIAN SNOW-SHOE.

over he goes. Figure 1 (on p. 475) shows the camp of a hunting party; one of them in making his first trial has met with the usual fate, and he will find it no easy matter to get up without help. But we are told by a friend who has travelled hundreds of miles upon them in the Arctic regions, that one soon learns to adapt his gait to these strange shoes, and can walk with great ease and rapidity. The other picture, fig. 2, of a hunter, shows how the shoes are fastened, and how the foot plays on them. Deer and elk, with their small sharp hoofs, break through the crust at every step, and are readily overtaken by the hunter on snow-shoes. Snow-shoes are necessary for lumbermen, hunters, farmers, and others who have to go about on the snow, but at the same time they are made to afford amusement. The young men have

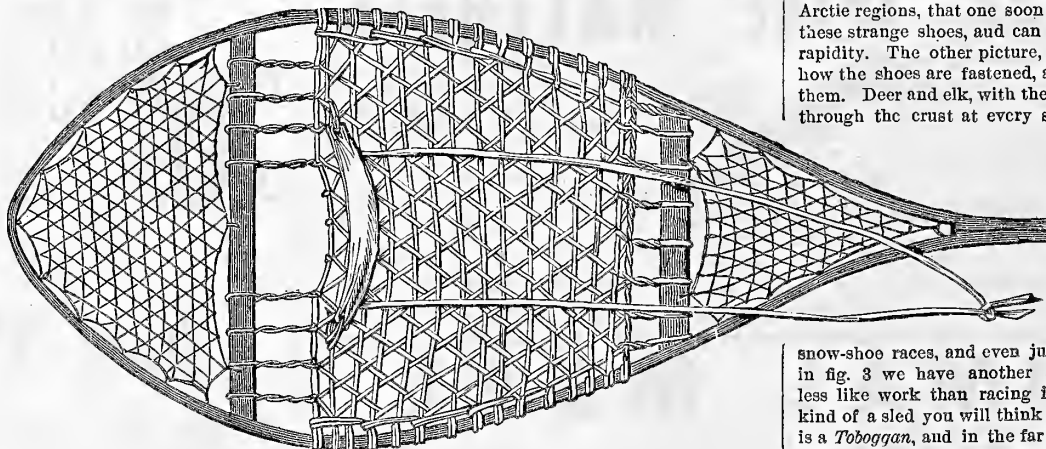


Fig. 5.—FORM OF SNOW-SHOE USED BY HUNTERS.

of the snow-shoe—to give a broad surface to the foot, indeed very rough shoes are made simply of a piece of board; but the shoe should be as light as possible, and it is found that the net-work answers the purpose of a solid board—affording a broad surface with great lightness. The foot is well protected by a piece of blanket folded over it, and a heavy stocking over this; the toe

snow-shoe races, and even jump with them on.... Here in fig. 3 we have another amusement that is much less like work than racing in snow-shoes. A strange kind of a sled you will think it—but it is not a sled—it is a Toboggan, and in the far north tobogganing is a favorite amusement with old as well as young. The toboggan—no doubt an Indian name—is a thin board, turned up in front; the engraving shows the position of the driver, with his steering iron, and that of his passenger. Given a long hill, smooth snow, a moonlight night, and a number of fur-clad boys and girls, and we can imagine that a tobogganing party must be a most lively scene. But the frolic has its lesson: however long and swift the ride—the toboggan must be drawn up hill again!

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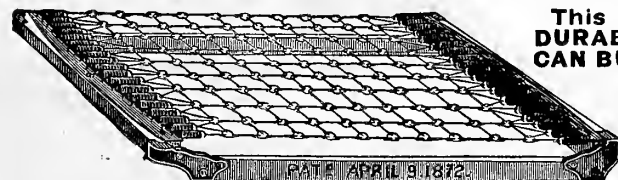
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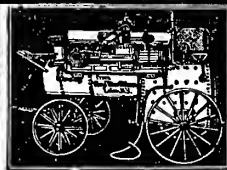
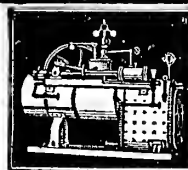
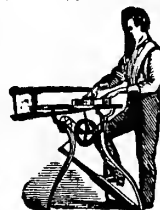
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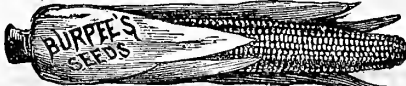
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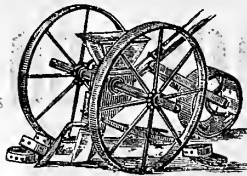
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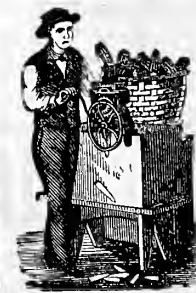
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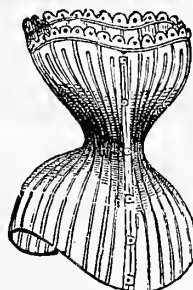
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A CARD.

We, the undersigned, respectfully announce to our former Agents and patrons that we have SOLD OUT our business, and that hereafter it will be carried on by the **BISSELL MFG CO.,** at 42 Murray St., New York, to whom they must apply for a continuation of their agency.

We also take pleasure in recommending the **BISSELL MFG CO.** to the favorable notice of all our former patrons.

Respectfully,

THE GEO. D. BISSELL CO.

NAUGATUCK, Conn., Oct. 12, 1878.

SPECIAL NOTICE.

We respectfully inform the public that we have purchased the business of the **GEORGE D. BISSELL COMPANY,** and have transferred it from **Naugatuck, Conn.,** to this City.

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As the result of much experimenting, we have succeeded in discovering a combination of metals of which the washer is now made, and which adds greatly to its value, and prevents absolutely the sticking of all resins or other matter upon the Washer, heretofore so difficult to cleanse after using. The Washer now comes out of the boiler as clean as when put in.

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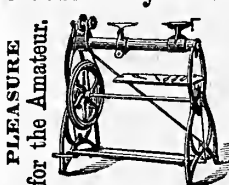
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Explanatory Notes.

Read and Carefully Note the following Items: The Table on this page tells the
 name and cash price of each article, and (in last column
 but one), gives the number of names sent in at the regular
 price of \$1.50 a year that will secure any premium article.
 (The last column gives the number of names at the
 lowest club price for four names, that is \$1.25
 each. Some persons quickly raise large clubs by taking
 all the names at \$1.25 each, or less, and themselves
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 articles very cheaply.)...**(a)** All subscribers sent by
 one person count, though from several different Post-
 offices. But...**(b)** Tell us with each name or list of
 names sent, that it is for a premium...**(c)** Send the
 names as fast as obtained, that the subscribers may begin
 to receive the paper at once. Any one can have any time
 desired, up to next June, to complete any list, but every
 premium desired will be sent as soon as earned and ordered...**(d)** Send the exact money with each list
 of names, so that there may be no confusion of money accounts...**(e)** Old and new subscribers all count in premium
 clubs, but a portion at least should be new names;
 it is partly to get these that we offer premiums to canvassers...**(f)** One or two Specimen Numbers, etc., will be
 supplied free, as needed by canvassers, (when 3 cents per
 copy is furnished to pay for mailing), but extra numbers
 are expensive, and should be used carefully and economically,
 and where they will tell. Other specimen numbers
 will be sent, post-paid, to canvassers only, for 10 cents
 each. The price to others is 15 cents...**(g)** Remit money
 in Checks on New York Banks or Bankers, payable to
 order of Orange Judd Company, or send Post-office Money
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 put in the money and seal the letter in the presence of
 the Post-master, and take his receipt for it. Money sent
 in any of the above ways will be safe against loss.
Illustrated Premium List sent free to applicants.

Table of Premiums

For Subscribers to American Agriculturist.

For Volume 38—(1879).

Open to All—No Competition.

No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at \$1.50 or at \$1.25
1	Boy's Tool Chest, (E. I. Horsman).....	1 00	8
2	Boy's Tool Chest (do.).....	2 50	5
3	Boy's Tool Chest (do.).....	5 00	15
4	Patent Magic Pencil (Ludden & Dow).....	1 50	4
5	Ladies' Magic Charm Pencil (do.).....	2 50	9
6	Girls' Magic Charm Pencil (do.).....	2 75	8
7	Gold Pen, Telescopic Case (do.).....	2 50	9
8	Gold Pen and Pencil, (comb'd) (do.).....	5 50	17
9	Little Girl's Wash Set, (C. W. F. Dare).....	75	2
10	Parchesi, (E. G. Selchow & Co.).....	1 62	4
11	Go-Bang, (do.).....	1 20	3
12	Sliced Objects, (do.).....	65	2
13	Sliced Birds, (do.).....	65	2
14	Sliced Animals, (do.).....	65	2
15	Vignette Authors, (do.).....	60	2
16	Portable Writing Desk, (C. W. F. Dare).....	1 25	3
17	Chess Men, (E. G. Selchow & Co.).....	3 20	6
18	Walnut Work Box, (C. W. F. Dare).....	1 15	3
19	Boy's Wagon, (do.).....	4 50	8
20	Our Boys' Wagon, (do.).....	8 00	12
21	Improved Bracket Saw, (do.).....	1 15	3
22	Bracket Saw Drill, No. 1.....	1 15	3
23	Buck-Saw for Boys, (C. W. F. Dare).....	1 00	3
24	Eagle Soap Bubble Toys (E. W. Bliss).....	1 00	3
25	Chastelle (Warner & Co.).....	1 00	3
26	Companion Autograph Album.....	1 00	3
27	Embroidery Frame.....	1 00	3
28	Crandall's Inq. Building Blocks, No. 3.....	1 90	2
29	Crandall's "District School".....	1 20	3
30	Crandall's Happy Family (New).....	1 20	3
31	Crandall's Heavy Artillery.....	3 00	6
32	Crandall's Chinese Blocks.....	1 25	3
33	Companion Tool Chest, No. 1.....	1 50	4
34	Knives and Forks (Meriden Cutlery Co.).....	14 75	19
35	Knives and Forks (do.).....	18 50	24
36	Carver and Fork (do.).....	3 75	7
37	Pocket Knife (do.).....	1 50	4
38	Pocket Knife (do.).....	2 00	5
39	Pocket Knife (do.).....	2 75	4
40	Ladies' Pocket Knife (do.).....	2 00	4
41	Multum in Parvo Knife (do.).....	3 50	7
42	Wire Bed Mattress (H. Buckingham).....	12 00	17
43	Sewing Machine, (Singer Man'g Co.).....	30 00	37
44	Sewing Machine (Domestic S. M. Co.).....	15 00	52
45	Sewing Machine (Remington).....	50 00	60
46	Sewing Machine (Wheeler & Wilson).....	60 00	70
47	Aquaplan (W. & B. Douglas).....	9 00	13
48	Self-adjusting Gold-plate Watch Key (J. S. Birch & Co.).....	1 00	3
49	Pocket Tool Holder (Miller's Falls Co.).....	1 00	3
50	Houchin's Imp. Pat. Pocket Cook Stove.....	1 25	3
51	Payson's Indefinite Ink—Pen, etc.....	75	2
52	Tubular Foot Lathe, No. 1, (Useful Machinery Co.).....	450 00	26
53	Piano Splendid Tact (Steinway & Sons).....	600	48
54	"National" Organ (G. A. Prince & Co.).....	150 00	1200
55	Universal Clothes Wringer, (Metropolitan Wash. Machine Co.).....	7 50	12
56	Turn-table Apple Parer (Goodell Co.).....	1 00	3
57	Climax Apple Corer & Slicer (do.).....	1 00	3
58	Family Cherry Stoner (do.).....	1 00	3
59	Bay State Apple Parer & Slicer (do.).....	1 50	4
60	"A" Saratoga Potato Peeler & Slicer (do.).....	1 00	3
61	Voore's Floor Set (Moore Man'g Co.).....	1 00	3
62	W. S. Blunt's "Universal Force Pump".....	12 00	18
63	Tea Set (Middleton Plate Co.).....	70 00	70
64	Ice Pitcher (do. do. do.).....	3 00	18
65	Syrup Cup with plate (do.).....	6 25	10
66	Child's Cup (do.).....	3 50	7
67	Butter Cooler (do.).....	6 50	10
68	Pickle Jar and Fork (do.).....	5 00	8
69	Cake Basket (do.).....	7 50	12
70	Cake Basket (do.).....	10 00	13
71	Casters (do.).....	5 25	8
72	Casters (do.).....	7 50	12
73	Casters (do.).....	10 50	15
74	Twelve Teaspoons (Meriden Cutlery Co.).....	7 25	21
75	Twelve Tablespoons (do.).....	14 50	19
76	Twelve Table Forks (do.).....	14 50	19
77	Child's Knife and Spoon (do.).....	3 00	6
78	French Cook's Knife, Fork, & Steel (do.).....	8 75	12
79	Case of Scissors (U. S. Steel Shear Co.).....	4 00	7
80	Family Scales (Fairbanks & Co.).....	14 00	19
81	Men's Pure Gum Knee Boots, (Candee).....	4 35	8
82	Boy's Pure Gum Short Boots, (do.).....	3 00	6
83	Household Press, (W. A. Boardman).....	2 10	4
84	Matthews' Garden Seed Drill, (E. & S.).....	12 00	18
85	Cannon's Broadcast Seed-sower.....	6 00	9
86	Woodruff's Patent Portable Barometer, (Square Case).....	12 00	17
87	Woodruff's Patent Portable Barometer, (Turned Case).....	8 00	12
88	New Hybrid Spring Wheat, "Champion," 3 lbs., (B. K. Bliss & Sons).....	2 00	4
89	New Hybrid Spring Wheat, "Defiance," 3 lbs., (Bliss).....	2 00	4
90	Breech-loading Pocket Rifle (Savage).....	14 00	19
91	Double Barreled Breech-loading Gun, (E. Remington & Sons).....	45 00	52
92	Creamoon Long Range Rifle (do.).....	100 00	200
93	Creamoon Long Range Rifle (do.).....	80 00	88
94	Creamoon Long Range Rifle (do.).....	60 00	70
95	Shot Gun, breech-loader, (do.).....	18 00	23
96	Archery Goods, Lancelwood Bow and half dozen Arrows.....	1 50	4
97	Canvas Gun Cover, (Thomson & Sons).....	1 50	4
98	Hunting Shoes, (do.).....	7 00	10
99	Dog Collar, (do.).....	1 00	3
100	Worcester's Great Illustrated Dictionary.....	10 00	15
101	Any Back Vol. Agriculturist.....	2 30	5
102	Any Two Back Volumes do.....	4 60	8
103	Any Three do. do.....	6 90	10
104	Any Four do. do.....	9 20	12
105	Any Five do. do.....	11 50	14
106	Any Six do. do.....	13 80	16
107	Any Seven do. do.....	16 10	18
108	Any Eight do. do.....	18 40	20
109	Any Nine do. do.....	20 70	22
110	Any Ten do. do.....	23 00	24
111	Any Eleven do. do.....	25 30	26
112	Any Twelve do. do.....	27 60	28
113	Any Thirteen do. do.....	29 90	30
114	Any Fourteen do. do.....	32 20	32
115	Any Fifteen do. do.....	34 50	34
116	Any Sixteen do. do.....	36 80	36
117	Any Seventeen do. do.....	39 10	38
118	Any Eighteen do. do.....	41 40	40
119	Any Nineteen do. do.....	43 70	42
120	Any Twenty do. do.....	46 00	44

The Premiums Nos. 4 to 8, 10 to 15, 17, 21, 22, 24, 26 to 29, 32, 33, 37 to 41, 43 to 51, 58, 89, 99, 101 to 108, inclusive, will each be delivered FREE of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 456.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or \$1.50 per volume.

Deformed Ducks.—"R. P. McL., Pictou, N. S. When a duck is deformed in the wings, there is no method of cure. To prevent this, and similar deformities, breed only from perfect birds.

Bee-Stings Curing and Cured.—A recent "Medical and Surgical Reporter" states that a woman in Prague, who suffered greatly from gout, was persuaded to try bee-stings as a remedy; three bees were allowed to sting her arm in several places, and a cure soon followed. Another contributor, an M. D., and bee-keeper, says that when Tincture of Arnica was applied to bee-stings, "the relief was immediate and complete."

An Imperfect Teat.—"J. F. G." When two teats are grown together, it is probable that one duct is common to the two, in which case an operation, to separate them, would be unsuccessful. By inserting a probe in each teat, if there is but one duct, the probes will come together. If there are two milk ducts, the teats may be cut asunder by a skilled veterinary surgeon.

Sowing Rye in Corn.—"R. G. H., Shusan, N. Y. We should not apprehend any detriment to the corn from sowing rye at the last hoeing. The rye would take hardly anything from the soil, and if the ground is rich enough the corn could stand it very well. As a general practice it is not to be approved, but for fall or early spring pasture, it is of great benefit at little cost.

Improved Plows.—"W. A. M., Centerville, Ala. The most effective plow is one that turns the soil in the best manner with the least draft. The steel and the "Adamant" plows are claimed to do this, and so far as we have tried them, they do it effectively. The harder and the smoother the surface of the mold-board, the less friction there is, and if the shape is right, the least draft.

Unhealthy Pear-Leaves.—"O. A., Grange Co., O. sends leaves badly affected by a fungus—one of the "cluster-cups"—which has appeared this year for the first time. Probably the same has existed before, but in such small numbers as not to be noticed, and the present season has been favorable to their development. All that can be done is to promote the general health of the trees.

Moss on Upland Pastures.—"S., Mason, N. H. Moss upon dry grass lands may be easily destroyed by harrowing it thoroughly, sowing some fresh seed upon the new surface with a mixture of 100 lbs. of Peruvian guano or superphosphate of lime, and 100 lbs. of gypsum, per acre. Wet lands need draining.

Large Cows.—"J., Hoquiam, W. T. It is difficult to raise rich butter cows of a large size. If it pays to breed large oxen for draft, it would be best to select good cows of large frame. Perhaps the Hereford cow, crossed with a Shorthorn bull of a milking family, would be the best combination to secure both butter and beef.

Why Wheat Lodges.—"C. D. B., Rockland Co., N. Y. The stalks that grow rank and thick are succulent and weak, and when the tops are loaded with water, after heavy rains, they are easily laid flat by the wind, if not by their own weight. They have no power to raise themselves, and the crop is "lodged." In this condition the grain does not mature. This happens in soils that are rich in organic matter, and are deficient in lime. A liberal dressing of lime will remedy the defect. In sandy soils, the application of a few bushels of salt per acre has the same effect as lime upon clay soils. Thin sowing, as for instance only one bushel per acre, tends to cause a stiff growth of stalk, and prevent lodging.

The Steel-Plate Engraving for PREMIUM CLUBS.

Owing to the necessarily large expense of furnishing the Steel-Plate, it was at first intended to limit its offer to subscribers paying the full price of \$1.50 a year, and a small addition, and where no other premiums were given. But we have finally decided to place all subscribers, as nearly as possible, upon equal footing, and we therefore make the following offers to all who are collecting lists of subscribers for Premiums:

Subscribers in Premium Clubs for 1879, according to the terms in the table on page 481, and in the General Illustrated Premium List, published in November, can each of them have the Steel-Plate Engraving, by adding only 20 cents for each name, to cover cost of packing, postage, etc., on the Engraving; Or only 13 cents each, when the Engravings are to be sent by Express, *unpaid*, in a single parcel, to one individual.

The Rapidly Increasing Circulation of the German Agriculturist affords us gratifying assurance, that its many improvements are being observed and appreciated. The splendid full-page engraving which now appears in every number, is richly worth the whole year's subscription price. Every German cultivator and laborer on the farm, or in the garden, should have the paper; while its varied household departments make the journal invaluable to every German home, either in the Old World or the New.

Attention Sportsmen, Farmers and others.—We invite all subscribers and others who may wish to make purchases of guns, revolvers, or any and everything in the sportsman's line to communicate with us. Our arrangements are now so complete for supplying such goods that we believe we are able to furnish them of a better quality and at cheaper rates than they can be procured generally through the country. Our elegantly illustrated Sportsman's Library Catalogue mailed on the receipt of two 3-cent P. O. stamps. Address, Sportsman's Department of the Orange Judd Company.

From Dark to Dawn, published by J. C. McCurdy & Co., Philadelphia. This is an elegantly bound, printed and illustrated work of 632 pages. The illustrations are full page steel engravings. The work is a second series of "Night Scenes in the Bible," by Rev. Daniel March. Written in an attractive style. This story of some of the notable incidents of sacred history will find a welcome in many homes. It has the endorsement of prominent divines for accuracy, purity of sentiment and high moral tone.

The Honey Locust.—"W. K. C.," Auckland, New Zealand. This makes a quick-growing and effective hedge, as it is very thorny. It is also called Three-thorned Acacia; botanically it is *Gleditsia triacanthos*. The seeds, if kept in the pods, germinate as readily as beans; but it is safer to seed before sowing those sold by seedsmen. Sow in rows wide enough apart to work among them, and keep free of weeds the first summer. In fall take up, assort in sizes, and heel-in until spring, then set at 18 to 24 inches apart, and treat the same as other deciduous hedges. White Thorn or Hawthorn is nearly abandoned for hedges in this country; the leaves appear late, drop early, become sun-burned, and are attractive to numerous insects. Honey Locust seeds will cost you about 50 cts. per lb., postage added.

Economical Good Cookery.—In the N. Y. Cooking School, Miss Juliet Corson teaches classes of various grades, from the children of the poor, to the daughters of the rich, and the lessons are varied to meet the needs of people in different circumstances. The aim in all, is to teach the pupils to cook well, and at the same time to cook economically. In her "Cooking School Text Book," Miss Corson gives the courses of instruction in her different classes. It is not to be inferred from the title, that it is a mere dry "Text Book"; the lessons are presented in the attractive form of bills of fare, arranged in a systematic manner. The articles required for each dish are first enumerated, the quantity of each article and its cost are stated. Then follow directions, giving the progressive steps in their proper order, very explicitly, but without needless repetition or cumbersome detail. As cooking schools are being established in various parts of the country, this has been prepared to meet the demand for a "Text Book," but it is not the less a most useful work for every household, and will commend itself to housekeepers generally by the excellence of the recipes and their economical character. A work like this, has a great advantage over the old style of "Cook Book,"

which is sometimes a jumble of tried and untried recipes from all sources, with the briefest possible directions, or a mere naming of the ingredients, and no directions other than "bake in a brisk oven," or something like it. Here, the recipes have been tried over and over again, and in teaching them to classes, all the difficulties that the unskilled are likely to meet with have been noted, and the directions framed to anticipate them. This work will be especially welcome to those who have assumed the cares of housekeeping, without having had previous experience—instances which occur more frequently than many suppose—as in the case of those whose lives before marriage have been devoted to teaching or other occupation. So far as any directions can supply the want of experience, those given here will do it. We may refer again to the plan of this work in our household columns. It concludes with a most useful appendix upon the principles of nutrition and the chemistry of food. Published by the Orange Judd Company; sent by mail for \$1.25.

Specifications for Building.—Many a house costs vastly more than its owner expected, on account of "extras," which mainly occur because the items were not "down in the bond"—the specifications being faulty. To meet the want of full specifications—to include everything that is at all likely to enter into the construction of a frame-house, Messrs. Palliser, Palliser & Co., architects, of Bridgeport, Ct., and authors of "American Cottage Homes," have prepared and published a set which they find useful in their own practice, and are used by other architects also. These are intended for frame-houses, costing from \$500 to \$15,000, and appear to cover every possible item of masons', carpenters', plumbers', painters' and other work, all so arranged as to be readily filled up to meet each particular case. The full set of "Specifications" with two "Forms of Contract" are sent from this office; price, post-paid, 75 cents.

Change of Firm and Location.—The headquarters of the Robbins Family Washer are no longer at Naugatuck, Connecticut. The washer is now made by a new firm, the Bissell Manufacturing Co.; their office being at No. 42 Murray St., New York City.

The Eclectic Manufacturing Co., occupy rooms in the American Agriculturist building, at 245 Broadway, New York. They take the name "Eclectic," because they elect to manufacture anything they choose. Among their specialties are the "Empress Train Supporter" (not a railway train, but a dress-train), which is highly endorsed by no less an authority than Madame Demorest, and a safety pocket for the watch or porte-monnaie, which seems to be a practicable and valuable affair.

Gummed Household Labels.—Here is a brand new wrinkle. Messrs. Cornell & Shelton, of Birmingham, Conn., publish a book of labels for about everything that needs to be labeled in the household. These are in neat, clear type, and, being gummed on the back, are ready for immediate use. We once dined where soft soap was served for gravy, the saleratus-box having been mistaken for the salt-box—neither receptacle being marked. Everything of this kind should be labeled, and these books will be found most handy for the purpose.

New School Books.—"First Lessons in Arithmetic," by Wm. J. Milne; Jones Brothers & Co., Phila. An excellent idea: the child is taught to observe and to reason by the natural process of induction. Pictures embellish the book, and are made to teach the science of numbers. This is a most rational method. The second in the series is "Milne's Practical Arithmetic," written on the same inductive plan, which leads the student gradually on from simple principles to abstract calculations. We have at hand, also, a new "History of the United States," from the same publishers. It embraces the features of the well-known "Lyman's Historical Chart," and is written in a pleasing style, intended to make the pupil "love the inspiring story." All of these books are well printed and attractive in appearance.

Wire for Fencing.—"H. P.," Sparta, Ala. Wire fences have been extensively and successfully used; the usual size of wire is No. 9; the number of wires is 3, 4, or 5, as the case may require. Barbed wire is more effective than the common sort, but costs twice as much. Springs have been found effective in taking up the slack or in relieving the tension in changes of temperature. To make a fence proof against hogs, the wire must be placed 6 to 10 inches apart. The wire will last many years.

"The Youth's Companion."—If success is evidence of merit, the juvenile weekly with the above title, published by Perry, Mason & Co., Boston, should be of the highest order of merit, as its success is something wonderful—and when we say that it is deserved, we can give no higher praise. Parents can not be too careful in the kind of reading matter they provide for their children. Some of the journals published expressly for

youth are of a pernicious character, and children had better not read at all than to pore over such trash. The "Youth's Companion" is always pure in its tone and elevating in its tendencies, and may be placed in the hands of children with safety.

Foot Power Saw.—"F. J. T.," Cannon Falls, Minn. A foot power saw may be used to cut cord wood, but a heavy fly wheel will be necessary to equalize the force. Such a saw will not cut so fast as a horse-power, but will be more effective than a buck-saw.

Poultry for Market.—It is of little use for persons at a distance to send poultry to the New York or any other market, unless it is prepared and put in the style that custom has established for the particular city. For the New York market, poultry must *never be drawn*, for most of the New England cities it is always drawn. Those who wish to learn how poultry must be prepared to bring the best price in the New York market, can obtain a circular giving full directions by sending to E. & O. Ward, No. 279 Washington St., N. Y. The Messrs. Ward are among our oldest commission houses, and their instructions for putting up poultry and all other produce, are the result of a long experience in the business.

Caponizing Poultry.—"A. B. T.," Lewis' Practical Poultry book gives directions for making capons. Price, from this office, by mail, post-paid, \$1.50.

Hay Tea for Pigs.—"B. G. L.," Cecil Co., Ind., writes that he has raised some thrifty young pigs upon hay tea in place of milk, which could not be spared for them. Boiled corn and house slops were given in addition.

Manure for Potatoes.—"G. S. E.," Mineola, L. I. We know of crops of 150 bushels of potatoes per acre, being produced on an application of 400 lbs. of the Stockbridge potato manure, and 300 and 400 bushels from larger amounts of the fertilizer. The parties dealing in the "Stockbridge Manures," are reliable. Some hold that better potatoes can be produced with such fertilizers than with barn-yard manure; but it depends quite as much on the soil and method of using, as on the manure; this is too much of a question for discussion here. Whether corn or potatoes would pay the best with good manure and cultivation, depends on seed, soil, and the farmer; then, other things being equal, there would probably be little difference in the ultimate results.

Medium-Sized Fowls.—As a rule, the medium-sized fowls of a breed are better than the very large ones, for laying or for table use. Quality and symmetry usually go together; that is, the bird possessing the shape and style of its breed in the highest degree, is the nearest perfect in other particulars, and is of medium size. In the Asiatic breeds of fowls, the specimen which stands a trifle above the average height, is, in the majority of cases, the best in color, symmetry, and utility.

Plowing under Clover for Wheat.—"S. N. S.," Leadmine, W. Va. The beneficial effect of plowing in clover for wheat, is due to the mass of readily decomposable vegetable matter, rich in nitrogen, and which in decaying has an important chemical effect in the soil. The soil is not re-seeded by plowing in the crop. The first growth is cut, and the second crop plowed in, or both crops harvested and the stubble turned under; then re-seeded in the usual manner. It is a paying practice.

Red Swine in the West.—"C. S.," Sullivan Co., Ill. There are many red swine, commonly called "Jersey Red," or "Duroc" in Kentucky. There have been several large sales the past year, which probably distributed them in Illinois, Indiana and other Western States.

Shrinking of the Shoulder Muscles.—"J. O. M.," Sank Center, Minn. When the shoulder muscles of a horse have shrunk greatly, the only relief is the use of a stimulating application, such as turpentine and alcohol, with one dram of tincture of Spanish-flies to the pint, or camphorated spirit; apply, either with brisk rubbing and kneading of the muscles, twice a day.

The "Ayrshire Record," Vol. II., published by the Ayrshire Breeder's Association, J. D. W. French, North Andover, Mass., Editor. This "Record" is distinct from the "N. A. Ayrshire Register," noticed in October, and differs from it in bearing the sanction of an association, while the other is a private enterprise. In this, there are two classes: animals tracing directly to importation, and those that can not be so traced, but which are thought to be pure blooded. The "N. A. A. R.," only admits to registry those animals tracing directly to importation. Of course, this complication causes some confusion to the uninitiated; but it seems only fair that valuable animals, supposed to be pure, should have such a place of registry as the "Ayrshire Record" provides, so long as proper care is exercised in the entries. The editor con-

gratulates the Association on its prosperity, and the increased interest in the breed. The price of this book is \$3.00, and may be obtained of the editor, or of J. F. Brown, Providence, R. I., or at this office.

Is Plowing Injurious?—"A. M.," Centerville, Ala. Plowing is the only practical mechanical means we now possess for preparing the soil for crops. As a rule, the more the soil is plowed and worked, the more fertile it becomes. There need be no fear that exposing the soil to the sun by frequent plowing will injure it. On the contrary, soil is injured by being baked in the sun, when it lies unplowed and unworked.

Spayed Heifers.—"H. W. T." Heifers are usually spayed after having their first calf. Heifer calves are more difficult to operate upon than young bulls. It is necessary that the ovaries of the young animal be fully developed before the operation is performed.

Presidential Pork.—The D. M. Magie Co., Oxford, Ohio, sends us the porcine pedigrees pertaining to a pair of Presidential Poland pigs—at least we suppose we may call them "Presidential," as they have been purchased by President Hayes, and sent to his farm at Fremont, Ohio. The sow is "Oxford Princess," which shows that the President of a republic does not despise royal pork. But any monarchical tendency on this side of the pair is offset by the male, who is no prince at all, but merely "Rumler Boy," which is not even aristocratic. We are glad to see that the President has an eye to the future; when he lays aside the cares of office, if the climate will not allow him to enjoy "his own vine and fig-tree," he can have his own swine and piggery, and eat sausage that has a pedigree. Now that the Poland Chinas have the endorsement of the President, they would be holding up their heads if their necks were not so short, but what is more to the purpose, the D. M. Magie Co. write, in the same letter which informs us of this shipment to Fremont, that they had just shipped Poland Chinas to six different States. Singularly enough they think that their advertisement in the *American Agriculturist* is not wholly unconnected with this result.

Locality for Sheep Husbandry.—"M. S. G." Boston. There is perhaps no other locality better adapted for wool growing than that including South Western Texas, Western Kansas, and Southern Colorado; for the reasons that the climate is dry and healthful, pasture is cheap, and there will be but little expense for feed in the winter. The best sheep is the native ewes crossed with pure Merino, or other pure blood rams.

Disease of the Stifle.—"T. G." Gilman, Ill. The diseased condition known under the common name of "stified," in a horse, is a weakness of the ligaments of the patella or knee-cap. The bone then slips out of place, and the horse is helpless. If it occurs once, it is almost certain to repeat itself when the animal slips or suddenly jerks the limb. If the bone is dislocated, it must be returned by drawing the leg backwards, and operating on the joint in a manner which can not be intelligently described. The services of a competent person should be secured for the service. If the ligament is only weak, or is strained, the joint should be bathed with cold water in which a little saltpetre has been dissolved, to remove heat. After this has been sufficiently done, a strong decoction of white oak bark should be applied to the part. Light exercise should be given, lest the muscles become shrunken for the want of use.

"The Dog—Its Management and Diseases." By John Woodroffe Hill. This is the reprint of an English work, on a subject that receives much more attention in England than with us. We had already examined the English work before the reprint came to our notice, and found it a very plain and sensible treatise. The diseases to which the dog is liable, are plainly described in popular language, and the treatment, which depends much more upon general care than much medicine, is clearly indicated.—Sent from this office.—English edition for \$6.00. American Reprint for \$2.00.

60 lbs. Carried 1,000 Miles for 6 Cents! Any farmer who has raised wheat knows how heavy a bushel of wheat feels, after he has carried it half a mile or so. We have found it a full day's work with a good span of horses, to take 30 to 40 bushels 14 miles to market, and return with an empty wagon. How would it be if we had no railroads or canals, to transport to the seaboard shipping markets the immense grain products of the West and Northwest? During July of this year, the average rate paid for carrying wheat all the way from Chicago to New York, by the Lakes (1.7c.) and canal (4.3c.) was only **six cents** per bushel of 60 lbs., and for a bushel of corn, 56 lbs., 54 cents! The distance by this route is some 1,500 miles. The Railroads, to compete with the water routes, have had to carry grain at about the same rates, and the shortest distance by railroad is

nearly 1,000 miles. Allowing a team and driver only \$4 a day for wages, feed, and other travelling expenses, carrying 40 bushels, and going 33½ miles each day, the expense would be \$3 per bushel, providing that the team got loading enough homeward, to pay expenses and wages back. So, at the best, it would cost *fifty times* as much to carry grain to market by wagon, as it does by railroad. The same reckoning applies, in a lesser degree, to shorter distances. Shall we tear up the railway tracks, or abuse the owners, who do not receive 4 per cent, on the average, for the money invested? Ought we not rather to have a good deal of sympathy with the original builders of these roads, a large number of whom never got anything for the money expended—neither principal nor interest?—Not a very profitable business certainly.

Concrete Houses.—"J. R. D.," Ellsworth Co., Kas. Descriptions and plans of concrete houses were given in the *American Agriculturist* for December, 1874. The methods there described may be changed or modified to meet the demands of any special case.

The Use of the Ecraseur.—"E. B.," Jerseyville, Ill. The ecraseur is a very simple instrument. It consists of a chain loop, which is passed around the organ to be removed, and is then drawn up by a screw, so as to cut off the part by tearing. There is then little or no bleeding. It is simply a substitute for a knife in the operation of castration, and can be used in cases where the knife cannot. It was described in the *American Agriculturist* for Nov., 1874, which see for particulars.

The American Agriculturist Clubbed with Other Journals.

In response to numerous requests from our subscribers, relative to obtaining the *American Agriculturist* in connection with other publications, we have made arrangements with several of the leading Magazines, which will be forwarded in combination with our Journal as follows: [Postage additional when sent to foreign subscribers.]

	Regular price	The 2 sup- plied, post- paid, by both, us for
<i>American Agriculturist</i> with		
Scribner's Monthly (\$4.00).....	\$5.50.....	\$4.75
Scribner's St. Nicholas (\$3.00).....	4.50.....	3.90
Demorest's Monthly (\$3.00).....	4.50.....	3.90
Harper's Monthly (\$4.00).....	5.50.....	4.75
Harper's Weekly (\$4.00).....	5.50.....	4.75
Harper's Bazaar (\$4.00).....	5.50.....	4.75
Appleton's Journal (\$3.00).....	4.50.....	3.90
Popular Science Monthly (\$5.00).....	6.50.....	5.50
Atlantic Monthly (\$4.00).....	5.50.....	4.75

On receipt of subscriptions as above, we shall forward the names and money to the offices of publication of the magazines ordered, and should there ever be occasion for complaints of non-receipt of such magazines, these should be made direct to their respective Publishers, and not to us.

Catalogues Received.

NURSERYMEN.

GEO. ACHELIS, Westchester, Pa.—Trade list of a large stock of fruit and ornamental trees, etc.

AUGUSTINE & Co., Normal, Ill.—General wholesale list, including root-grafts and trees in bud.

G. H. BANTA, Riverdale, Bergen Co., N. J.—A large wholesale and retail list.

BELLEVUE NURSERY Co., Paterson, N. J.—Wholesale list of peralgoniums and other florists' stock.

CHAS. BLACK & BRO., Hightstown, N. J.—Makes a specialty of peach-trees, but has a full stock of others.

BUSH & SON & MEISSNER, Bushberg, Jefferson Co., Mo.—Send their full list of grape vines and small fruits. The immense list of grapes is classified in the same admirable manner that we have heretofore noted.

JOHN S. COLLINS, Moorestown, N. J.—One of the oldest small fruit nurseries, and has various novelties.

HARVEY CURTIS, Oswego, N. Y.—Marks down his stock at wholesale rates.

SAML. C. DeCOU, Moorestown, N. J., has a general variety of small fruits, with several specialties.

GIBSON & BENNETT, Woodbury, N. J., offers small fruits in general, including Felton's seedlings.

CHAS. A. GREEN, Clifton, Monroe Co., N. Y.—A list of small fruits, and a brief treatise on their culture.

A. HANCE & SON, Red Bank, N. J.—Send their wholesale and retail list for 1879, of a large and varied stock, with a number of specialties and novelties.

HEIKES' NURSERY Co., Dayton, Ohio—A wholesale list of fruit and ornamental trees.

D. E. HOXIE, Northampton, Mass., has a general list of small fruits.

JONES & SONS, Rochester, N. Y.—A wholesale list of fruit and ornamental stock.

McBROOM & WOODWARD, London, Canada.—Catalogue of bulbs and dried flowers, etc.

THOMAS MEEHAN, Germantown, Pa., sends a special list of ornamental trees, and small stock for mailing.

SAM'L. MILLER, Sedalia, Mo.—A variety of small fruits.

WILLIAM PARRY, Cinnaminson, Burlington Co., N. J.—New strawberries and raspberries, etc.

J. H. RICKETTS, Newburg, N. Y., offers two of his remarkable seedling grapes.

JOHN SAUL, Washington, D. C.—Sends his wholesale catalogue for '79, of fruit and ornamental trees.

SHINN & Co., Niles, Alameda Co., California.—A full list of fruit and ornamental trees, including many peculiarly adapted to the climate of the Pacific coast.

H. H. SMITH, West Haven, Conn., makes a specialty of the Crescent Strawberry, and has other proved sorts.

STORRS, HARRISON & Co., Painesville, Ohio.—Wholesale and retail lists for '79, of a large variety of fruit and ornamental trees, shrubs, etc.

JOHN VAN DOON, New Amsterdam, Wis.—Makes a specialty of small fruits at low prices.

LEO, WELTZ, Wilmington, Ohio.—General nursery stock, with a plate of the "Forest Rose" strawberry.

N. B. WHITE, Norwood, Mass.—New grapes and strawberries.

SEEDSMEN AND FLORISTS.

ROBERT BUIST, Philadelphia, Penn., sends a wholesale list of "well grown, clean, and properly named" greenhouse and stove plants.

HENRY A. DREER, Philadelphia, Penn., includes bulbs, seeds of the season, greenhouse and other plants, and horticultural appliances, all in one compact catalogue.

PETER HENDERSON & Co., No. 35 Cortlandt St., N. Y., have bulbs, seeds for fall sowing, plants for winter blooming, small fruits, and florists' requisites.

LEEDS & Co., Richmond, Ind.—A wholesale list of greenhouse plants, especially roses.

JOHN SAUL, Washington, D. C., sends a separate bulb catalogue—and very full it is.

STORRS, HARRISON & Co., Painesville, Ohio.—Special catalogue of bulbs and greenhouse stock.

FARM MACHINERY, IMPLEMENTS, ETC.

BLAXTER MANUFACTURING Co., Cincinnati, O., make everything in the way of sugar and sorghum machinery, steam engines, threshing machines; they publish a useful treatise on sorghum, its growth and manufacture.

BOOMER and BOSCHERT PRESS Co., Syracuse, N. Y. Their lard and tallow presses are the subject of a special catalogue. This press is made on the same principle as their well-known cider press.

BRADLEY & COMPANY, Syracuse, N. Y.—Circulars describing their reversible harrow, mowers, reapers, cultivators, hay rakes, and iron sleigh knees.

C. & G. COOPER & Co., Mt. Vernon, O.—A well illustrated catalogue of portable and traction farm, and stationary engines, mills, saws, etc. Also a farm engine circular.

P. K. DEDERICK, Albany, N. Y., give the history and specifications of the various patents of their remarkable presses for hay, cotton, etc., in a neat pamphlet.

A. HOAG, Grand Isle, Vt.—Illustrates and describes his planter for corn, beans, etc.

LIVINGSTON & Co., Pittsburgh, Pa.; "Monitor Corn Sheller," of which there are now over 20,000 in use.

N. P. MIX, Avenue, Franklin Co., O., claims that his is the "Banner Wind Mill."

SKINNER & WOOD, Erie, Pa., set forth the merits of their portable and stationary engines, boilers, etc., giving interesting information.

GARDNER B. WEEKS, Syracuse, N. Y.—Price list of cheese and butter factory and dairy supplies and apparatus. A handsome catalogue and a full list.

POULTRY.

A. C. NELLIS, Canajoharie, N. Y., offers Brown Leg-horns, and describes them in full.

EPH. R. NEWHARD, Meadow Lawn Poultry Yards, Allentown, Pa.—Light Brahmas, Plymouth Rocks, Hamburgs, Black African Bantams, turkeys, ducks, and geese. A small, but comprehensive circular.

W. G. TRACY, Towanda, Pa.—Has the leading breeds.

MISCELLANEOUS.

A. D. DYE & Co., Towanda, Penn.—Various cooking and heating stoves.

GREENFIELD TOOL Co., Greenfield, Mass.—A great variety of wares, from table cutlery to ox shoes.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y., tells about Cotswold-Merino crosses, in his catalogue of the above and pure-bred Cotswolds; also Essex pigs.

JOHNSON, BLACK & Co., Erie, Pa.—Describe their stoves furnished with the "Duplex Grate."

LAMB KNITTING MACHINE Co., Chicopee Falls, Mass.—Make, besides the well known Lamb Machine, the Tuttle Knitting Machine; each of which has its peculiarities.

MASSACHUSETTS ARMS Co., Chicopee Falls, Mass.—The Maynard Rifles with ammunition and appliances.

CLARK PETTIT, Salem, N. J., includes Jersey Red swine, with Southdown sheep, Plymouth Rock fowls, and Mammoth Bronze turkeys in a neat catalogue.

RANSOM STOVE WORKS, Albany, N. Y., and Chicago, Ill.—Offer their "New Helca" with the "Duplex Grate."

F. A. SINGLAIR, Mottville, Onondaga Co., N. Y.—Continue to make "Common Sense" chairs (of which we have already favorably spoken), in different styles.

UNION STOVE AND MANUFACTURING Co., Pittston, Pa.—Send a catalogue of their different heaters and ranges, that deserves special notice for the great excellence of its engravings and the taste that marks the whole.

WHITEHALL, TATUM & Co., 46 and 48 Barclay St., N. Y.—Jars for Museum specimens.

FOREIGN CATALOGUES.

WILLIAM BRICE & Co., Glasgow, Scotland.—Wholesale Price-current of farm and vegetable seeds.

NEW PLANT AND BULB Co., Colchester, Eng.—A full list of Japanese and other bulbs, orchids, etc.

P. SEBIRE, Ussy, France.—Sends his wholesale catalogue of general nursery stock.

WILSON & RANKIN, Glasgow, Scotland.—Wholesale list of garden and field seeds.

Imperial Egg Food.



(Trade Mark.)

Patented February 25, 1875.

Will make your Hens lay. Permanently benefits laying Hens, Moulting Fowls, and Young Stock. It makes the Poultry Yard the best paying part of the farm. Packages sent prepaid for 50c. and \$1.00. Twenty-five pound kegs, by freight, \$6.25. Special arrangements with freight and express companies enable us to obtain very low rates for distant orders. Sold by Agricultural Stores, Grocers, Seedsmen, and Druggists.

CHARLES R. ALLEN & CO.,
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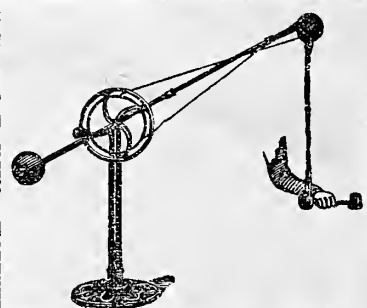
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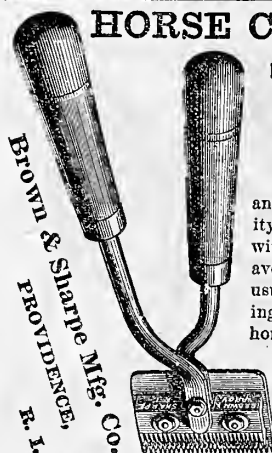
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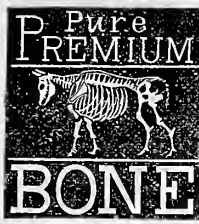
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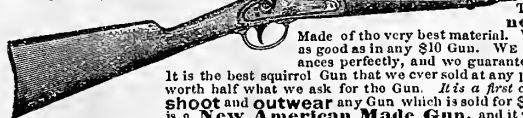
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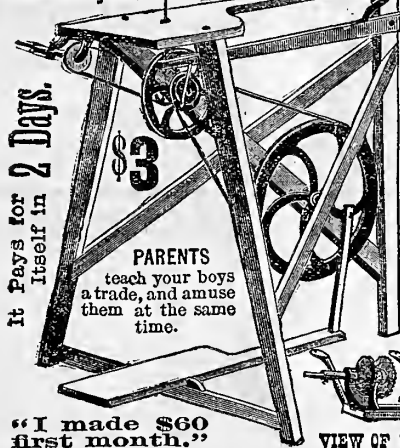
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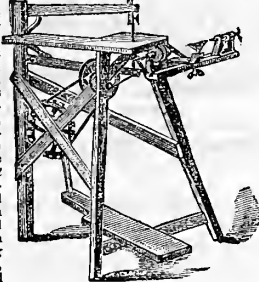


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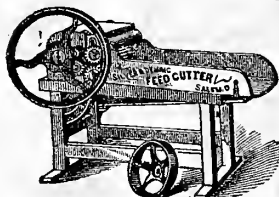
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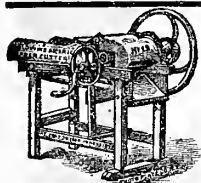
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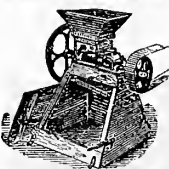
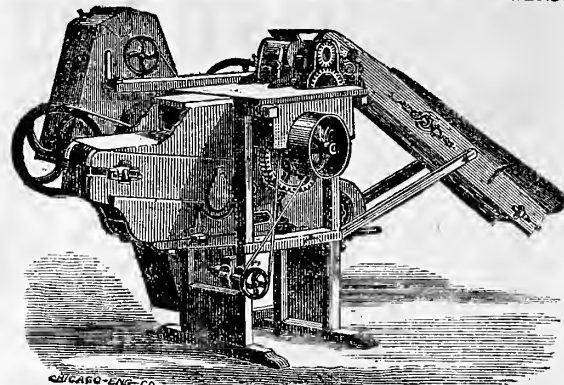
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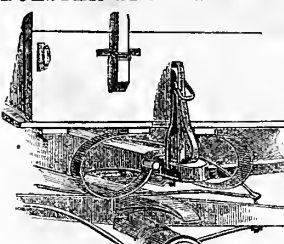
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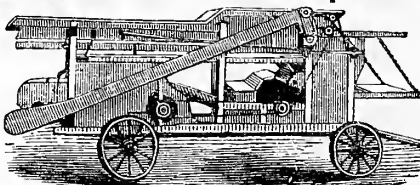


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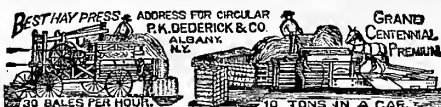
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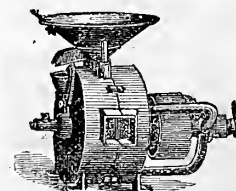
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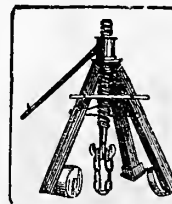
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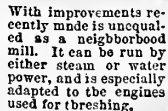
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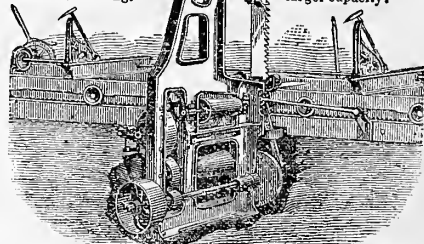
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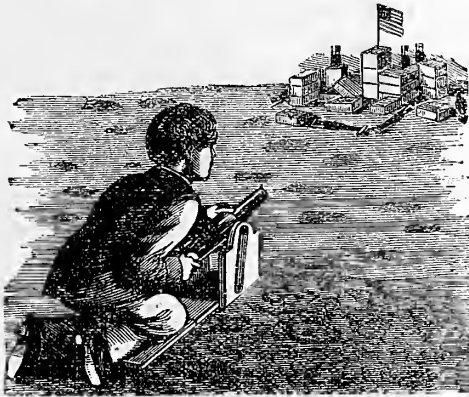
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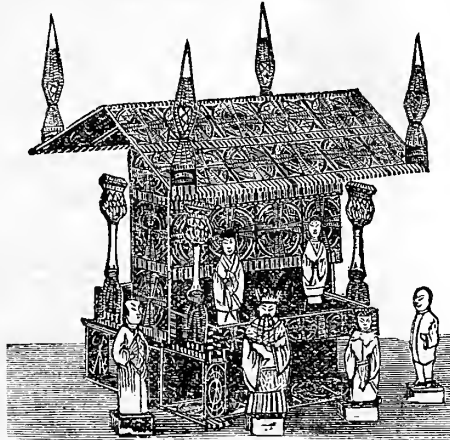
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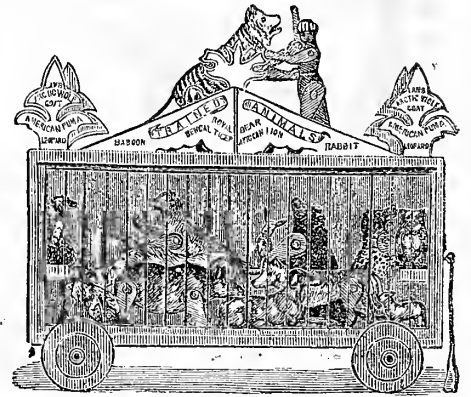
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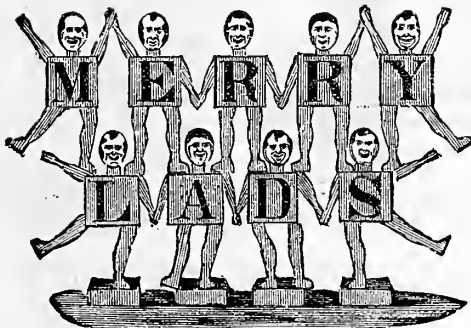
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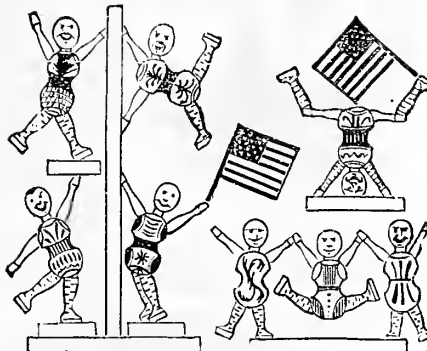
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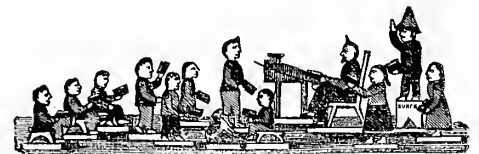
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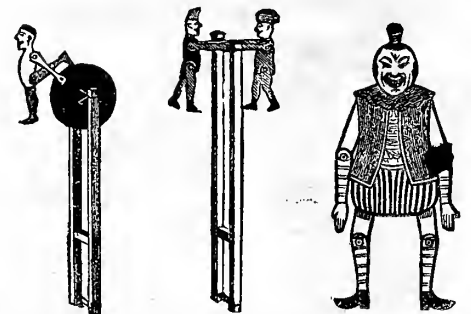
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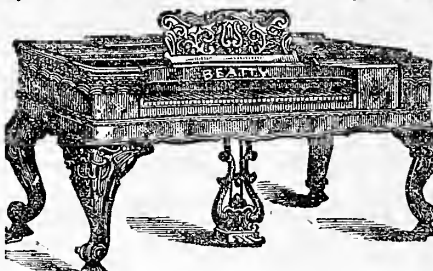
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The United Presbyterian (Pittsburg, Pa.)

It tells what plants to select, how to plant and take care of them, and how to arrange them in the most artistic ways for effect. The illustrations show how a few properly arranged plants, at a window, may be made to adorn a room, and give it a delightful summer aspect through the winter months.

New York Evening Express.

"Winter Greeneries at Home" is a very neat little work by Rev. Dr. Johnson, of Allegheny, Pa., devoted to Window Gardening, and largely the fruit of the author's successful experience in thus beautifying his own residence. The culture of flowers in an ordinary dwelling requires a loving care, and perhaps a native tact, not always purchasable with the best and most practical of books, but such volumes are calculated to develop these qualities where they have hitherto been latent, as well as to supply the place of much tedious experience, and obviate the dangers of many trying failures on the part of others. *Country Gentleman*, (Albany.)

In writing this volume, Dr. Johnson has told the secret of beautifying our homes in winter time. If one were to enter his study he would find there an illustration of success in this art. The knowledge is communicated in a fine and familiar way that brings teacher and pupil into sympathy with each other, and makes the study a delight.

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It tells, in a pleasant and practical way, how to beautify the house with plants, vines, hanging baskets, and the many other decorations of vegetable life; how to produce luxuriant growth and bloom; how to grow plants from cuttings and seeds; how to train them to make a greenery successful, and, in short, all that any one needs to know about house plants.

Boston Globe.

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St. Paul and Minneapolis Pioneer Press.

People who are desirous of beautifying their homes, will find the little book on Window Gardening, by E. A. Johnson, specially useful and suggestive. It tells what plants to select, how to plant and take care of them, and how to arrange them in the most artistic ways for effect. The illustrations show how a few properly arranged plants at a window may be made to adorn a room, giving it a delightful summer aspect through the winter months.

Commercial Advertiser (Buffalo, N. Y.)

The book is designed for the use of window gardeners who cannot afford expensive apparatus, and the hints and directions which it contains are of a sort to be followed out in almost any hour.

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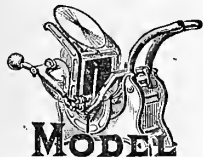
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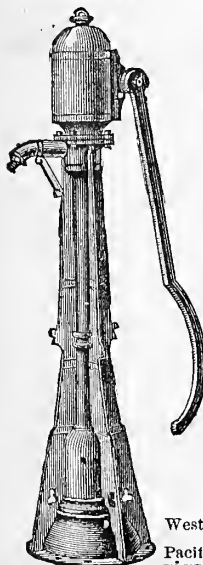
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